Canovision 8

SERVICE MANUAL

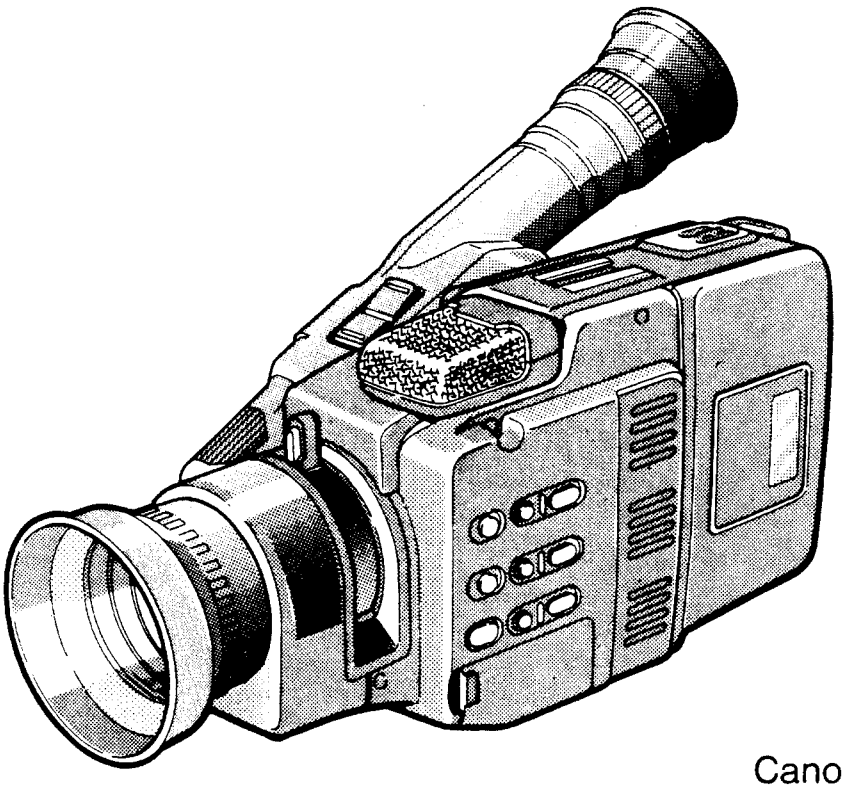
E850HiE,F

(REF. NO. D15-5130,5131)

8mm Video Camcorder

PAL

F-PAL



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Video Technical Service Dept.
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SAFETY PRECAUTIONS

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety-related characteristics, always use genuine CANON replacement parts.
   Especially critcal parts in the power circuit block should not be replaced with other makes.
   Critical parts are marked with ⚠ in the schematic diagrams.
2. The primary source of X-ray radiation in this viewfinder is the picture tube. The tube used in the viewfinder is especially constructed to limit X-ray radiation emission. For continued X-ray radiation protection, the replacement tube must be same type as the original, CANON approved one.
3. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been oberheated or damaged by the short circuit.
4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
5. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

5-1 Leakage Current Cold Check

1) Unplug the AC cord and connect a jumper between the two prongs on the plug.
2) Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metalic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metalic part has a return path to the chassis, the reading should be between 1MΩ and .5.2MΩ. When the exposed metal does not have a return path to the chassis, the reading must be ∞.

5-2 Leakage Current Hot Check

1) Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2) Connect a 1.5KΩ 10 watt resistor, paralleled by 0.15μF capacitor, between each exposed metalic parts on the unit and a good earth ground such as a water pipe, as shown in the figure below.
3) Use an AC voltmeter, with 1000Ω/volt or more sensitivity, to measure the potential across the resistor.
4) Check all exposed metallic parts of the cover (Cable connection, Handle bracket, metallic cabinet. Screwheads, Metallic overlays, etc), and measure the voltage at each point.
5) Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6) The potential at any point should not exceed 0.75V RMS.
   A leakage current tester (FLUKE MODEL: 8000A equivalent) may be used to make the hot checks.
   Leakage current must not exceed 0.5 milliamp.
   In case a measurement is out side of the limits specified, there is a possibility of a shock hazard, and corrective action must be taken before returning the instrument to the customer.

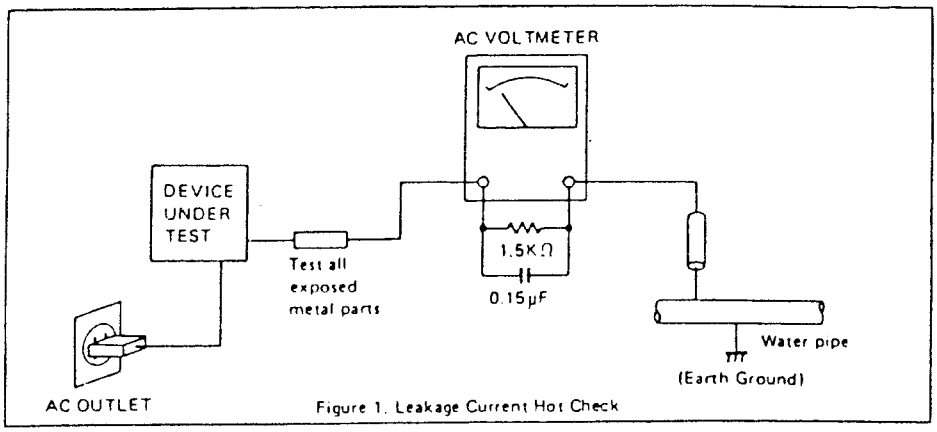

Figure 1. Leakage Current Hot Check

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CHAPTER I. GENERAL DESCRIPTION OF PRODUCT

1. Product Overview

Inheriting the excellent features and performabilities of Model E800 HiE/HiF, this camcorder is equipped with the built-in IC title and music functions that are unprecedented by any other designs. These advanced technologies formulated in this model let the user create sophisticated video pictures with ease and pleasure.

1-1 Major features

(⊠ ... New features; o ... Same features as those of Model E800 HiE/HiF)

(1) Superlative picture quality

- o Hi8 system
- o CCD with 420,000 pixels
- o Higher-performance 8x zoom lens
- o S-video output terminal with Y/C separating function

(2) Excellent sound quality

- o Hi-fi AFM stereo sound recording

(3) Automatic videographing

- o Fuzzy-logic autofocusing
- o Auto-tracking autofocusing
- o Auto white balancing through 25-area split evaluation
- o Center-weighted average metering, auto backlight compensation, auto knee circuit
- o Autofocus macro facility

(4) Versatile functionalities

- ⊠ Built-in IC title function (Eight kinds of titles memorized)
- ⊠ Built-in IC music function (Eight melodies memorized)
- o Multi-action grip with the electronic viewfinder mounted
- o Sports finder standard-equipped
- o Color character tilting, auto dating
- o Digital title memory
- o Wireless remote controller standard-equipped
- o Wide-angle macro zooming (As close as 4 mm from the surface of lens)
- o Quick search (Fast drive in forward/backward direction ... Approx. 30x in LP mode; Approx. 15x in SP mode)
- o Power-on full-auto system
- o Self-timer/interval-timer recording
- o Video/audio synchronous fading (white fading)
- o Edit switch equipped
- o High-speed electronic shutter (1/2000, 1/1000, 1/500, 1/250 sec)
- o Stereo headphone terminal equipped
- o Remote control terminal equipped for simple editing unit (VE-100EXP/F)

1-2 External view and nomenclature

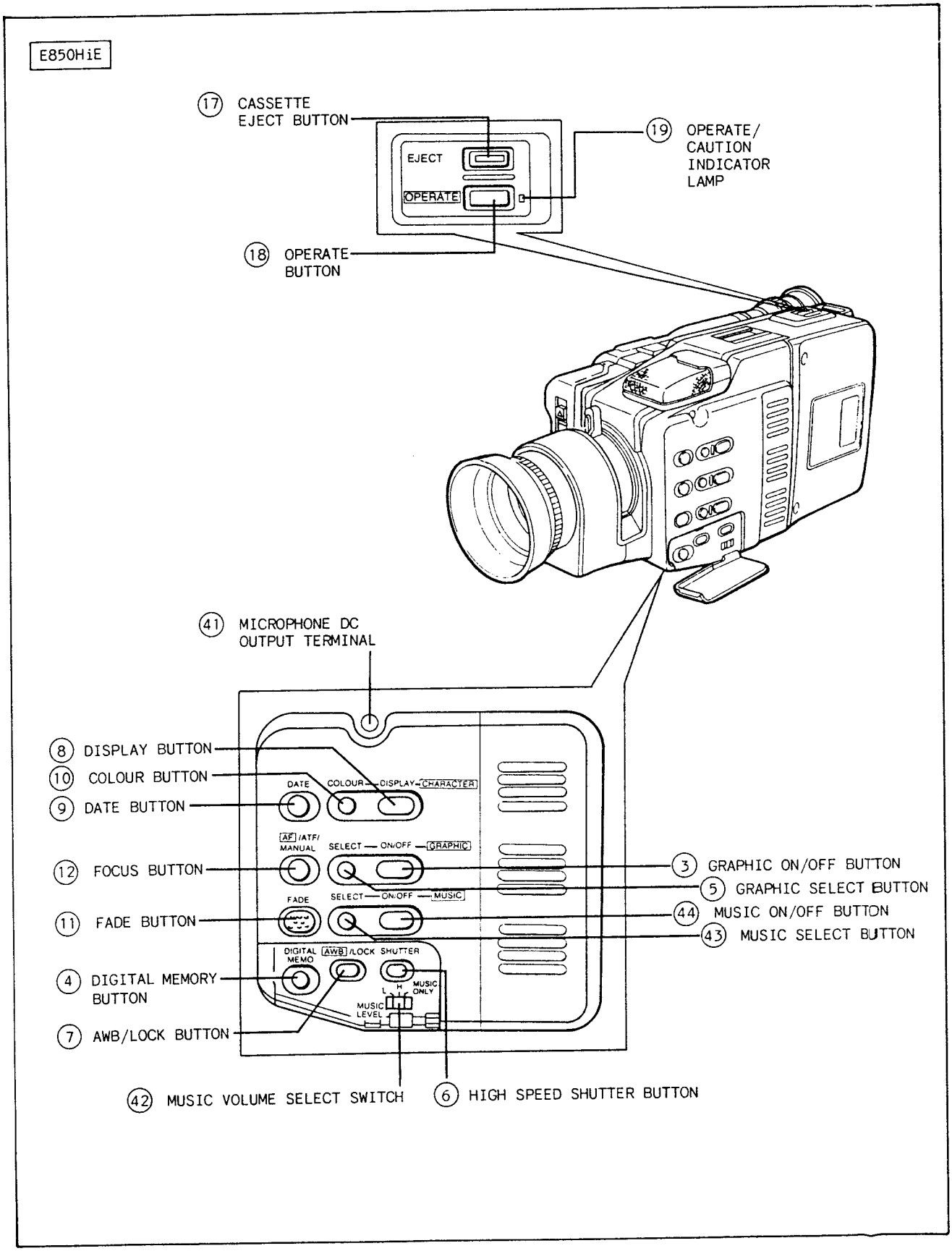


Fig. I-1

E850HiF

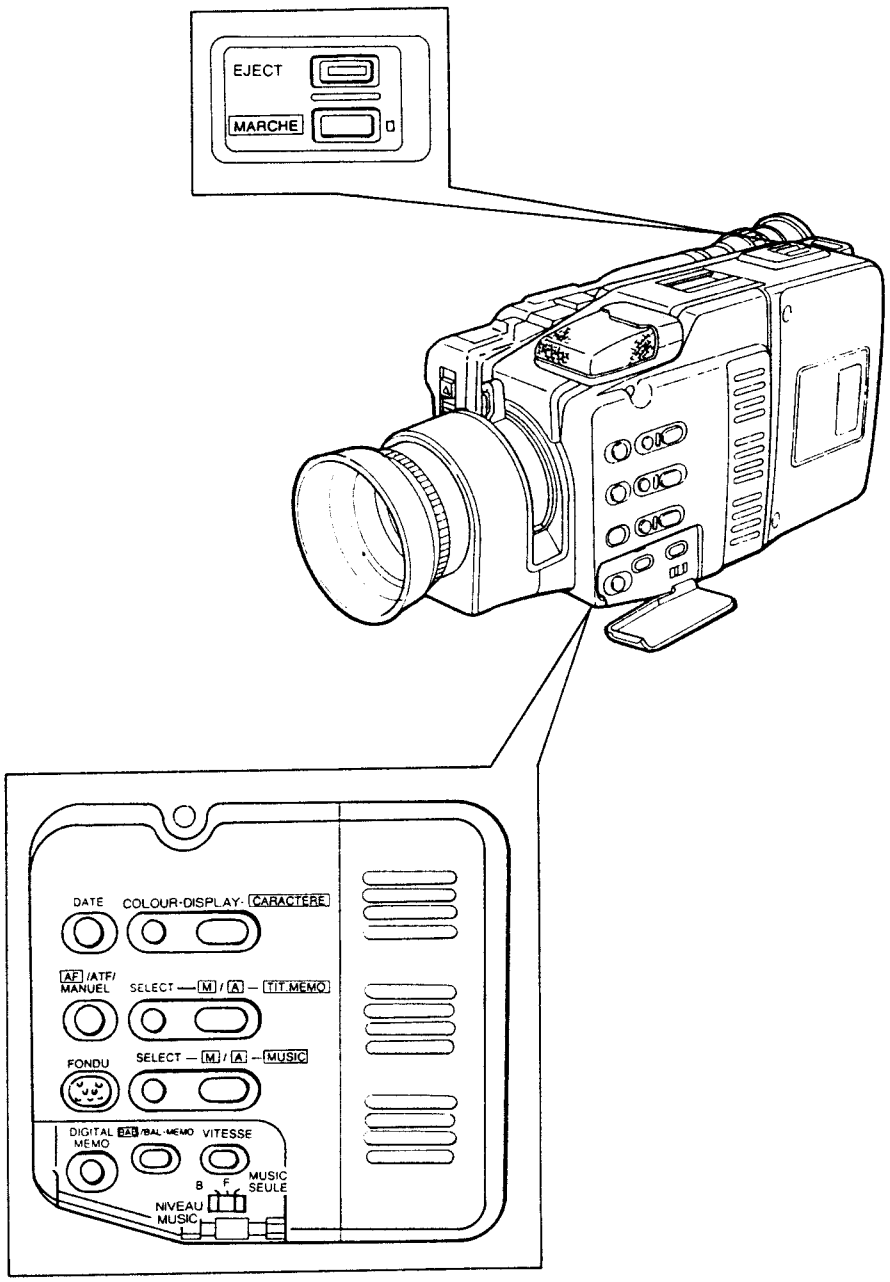


Fig. I-2

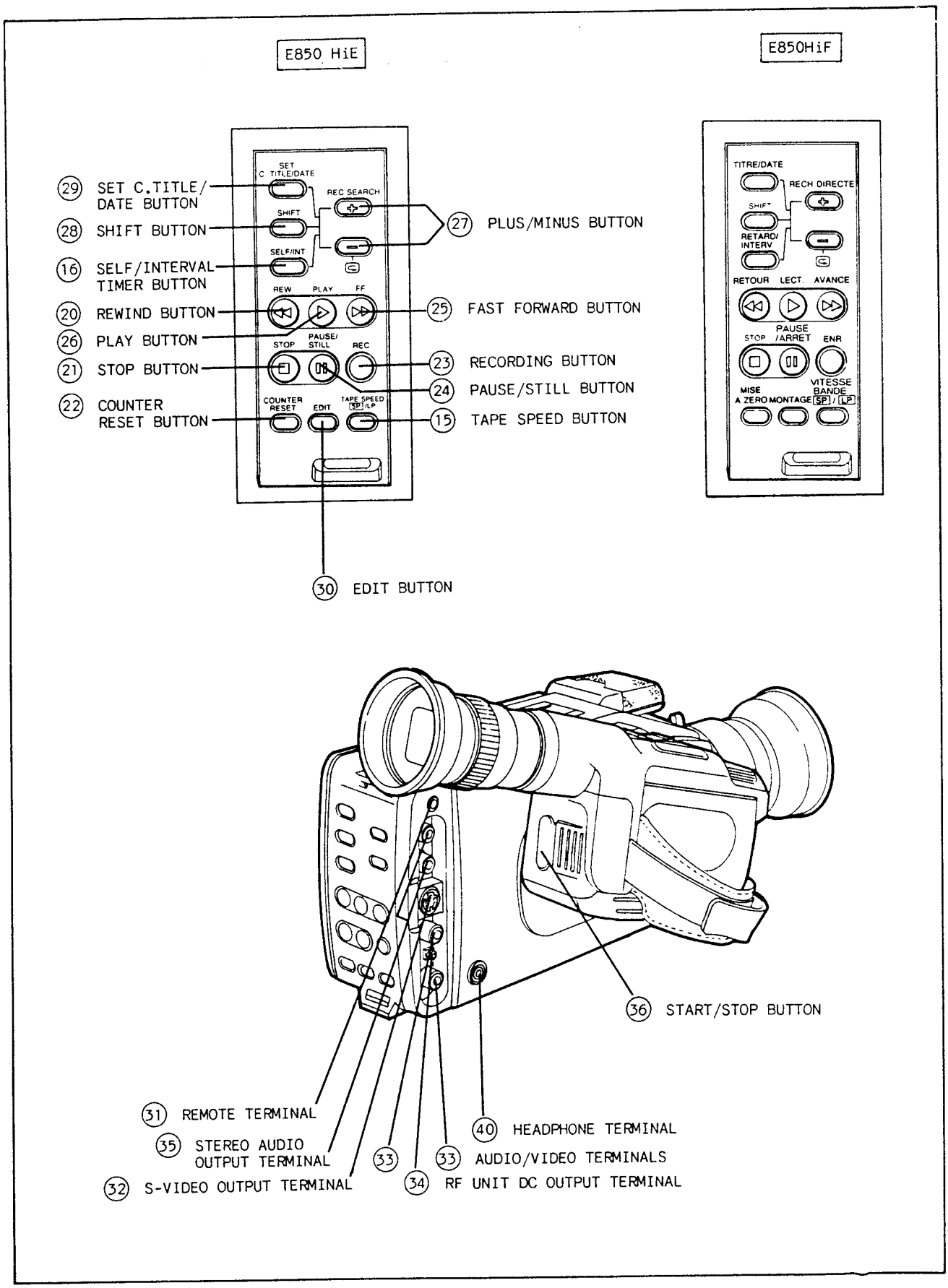

E850 HiE
E850HiF
SET C.TITLE/DATE
REC SEARCH
SHIFT
SELF/INT
REW
PLAY
FF
STOP
PAUSE/STILL
REC
COUNTER RESET
EDIT
TAPE SPEED SP/LP
TITRE/DATE
RECH DIRECTE
SHIFT
RETARD/ INTERV
RETOUR
LECT.
AVANCE
STOP
PAUSE /ARRET
ENR
MISE A ZERO
MONTAGE
VITESSE BANDE SP/LP
(29) SET C.TITLE/ DATE BUTTON
(28) SHIFT BUTTON
(16) SELF/INTERVAL TIMER BUTTON
(20) REWIND BUTTON
(26) PLAY BUTTON
(21) STOP BUTTON
(22) COUNTER RESET BUTTON
(27) PLUS/MINUS BUTTON
(25) FAST FORWARD BUTTON
(23) RECORDING BUTTON
(24) PAUSE/STILL BUTTON
(15) TAPE SPEED BUTTON
(30) EDIT BUTTON
(36) START/STOP BUTTON
(31) REMOTE TERMINAL
(35) STEREO AUDIO OUTPUT TERMINAL
(32) S-VIDEO OUTPUT TERMINAL
(33) (33) AUDIO/VIDEO TERMINALS
(34) RF UNIT DC OUTPUT TERMINAL
(40) HEADPHONE TERMINAL

Fig. I-3

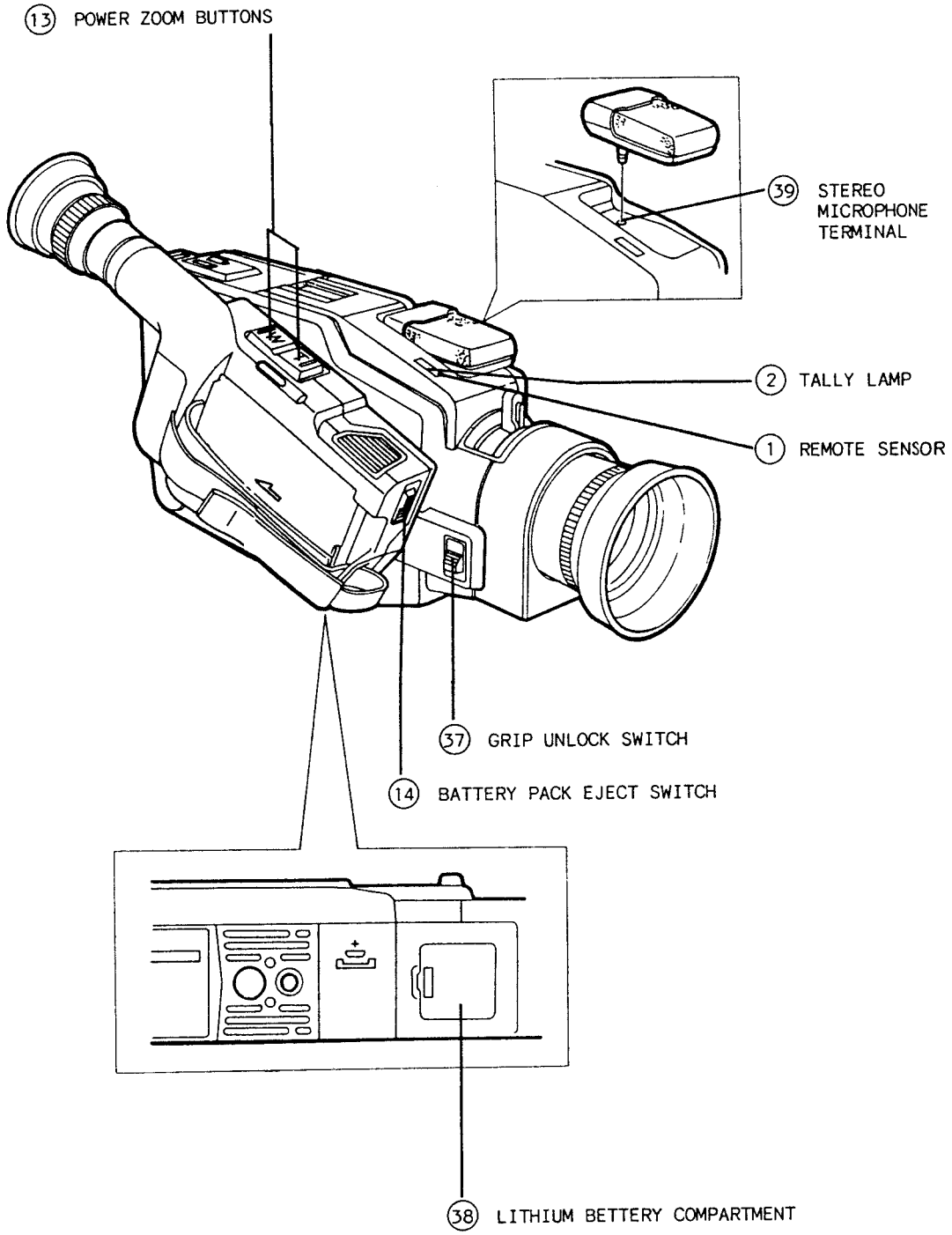

⑬ POWER ZOOM BUTTONS
⑲ STEREO MICROPHONE TERMINAL
② TALLY LAMP
① REMOTE SENSOR
㊲ GRIP UNLOCK SWITCH
⑭ BATTERY PACK EJECT SWITCH
㊳ LITHIUM BETTERY COMPARTMENT

Fig. I-4

1-3 Brief description of control buttons, terminals and external parts

① Remote sensor

Infrared-light signals from the remote controller are received through this window.

Light receiving angle : Approx. 30° at left/right
Approx. 15° at upper/lower

Remote-controllable distance: 5 meters

② Tally lamp

The tally lamp flashes during camera recording operation or self/interval timer operation. It lights up steadily when the remote control signal is received.

Camera recording operation	ON: 0.5 sec / OFF: 0.5 sec
Self-timer active state	ON: 0.5 sec / OFF: 1.5 sec
Interval-timer active state	ON: 0.5 sec / OFF: 1.5 sec
Remote control operation	Lights up steadily.

③ GRAPHIC ON/OFF button

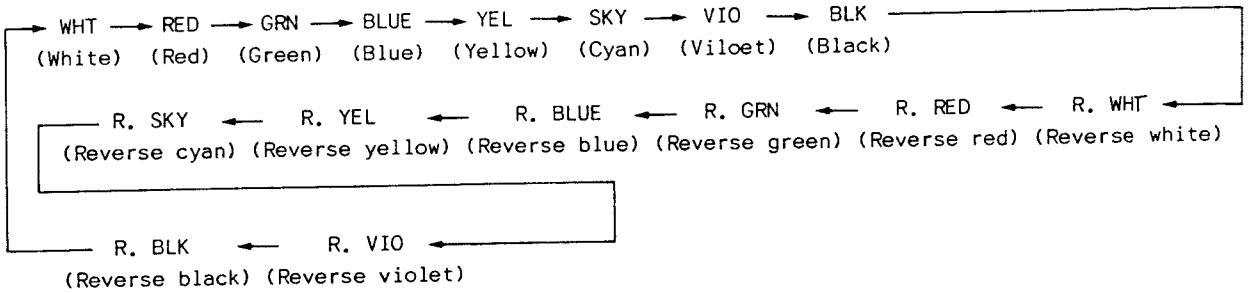
Pressing this button in the CAMERA mode superimposes a memorized graphic title on the screen being videographed, i.e. with the IC title function, a graphic title can be superimposed during camera recording.

④ DIGITAL MEMORY button

Pressing this button lets the internal memory store a digital image. Also, an image having insufficient or excessive contrast can be adjusted gradually for better contrast by holding down this button. While it is held down, the original contrast of image is made higher through 8 steps and then it is changed from the lowest contrast state to the highest contrast state through 16 steps. Note that this contrast adjusting function is available only in monochrome (shades of gray).

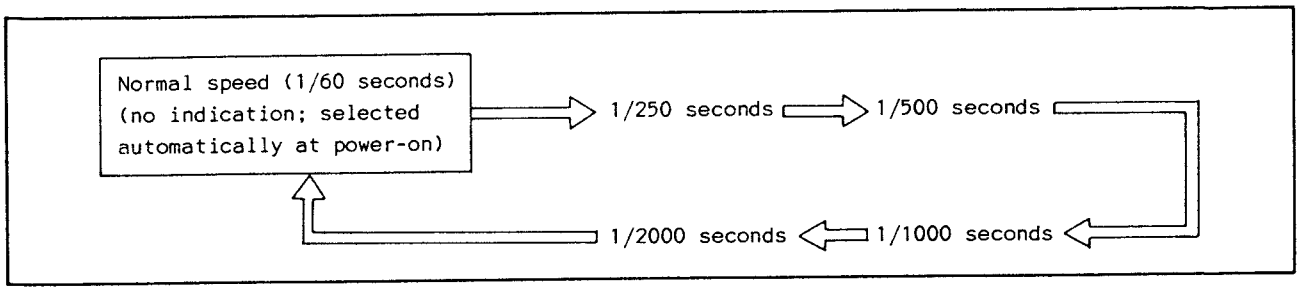
⑤ GRAPHIC SELECT button

The color of a digital image stored with the DIGITAL MEMORY button ④ can be changed using this button. Each press of this button changes the color of image (eight colors in each of non-reverse and reverse modes). Also, holding it down for more than three seconds sets up the see-through color mode. In this mode, a videographed scene can be seen through the transparent digital image. The see-through mode can be canceled by holding it down again for more than three seconds.


WHT → RED → GRN → BLUE → YEL → SKY → VIO → BLK
(White) (Red) (Green) (Blue) (Yellow) (Cyan) (Viloet) (Black)
R. SKY ← R. YEL ← R. BLUE ← R. GRN ← R. RED ← R. WHT
(Reverse cyan) (Reverse yellow) (Reverse blue) (Reverse green) (Reverse red) (Reverse white)
R. BLK ← R. VIO
(Reverse black) (Reverse violet)

⑥ HIGH-SPEED SHUTTER button

The shutter speed can be changed by pressing this button in the CAMERA mode. One of shutter speeds of 1/250, 1/500, 1/1000 and 1/2000 seconds is selectable in a cyclic manner as indicated below. The selected shutter speed is displayed on the viewfinder screen.



⑦ AWB/LOCK button

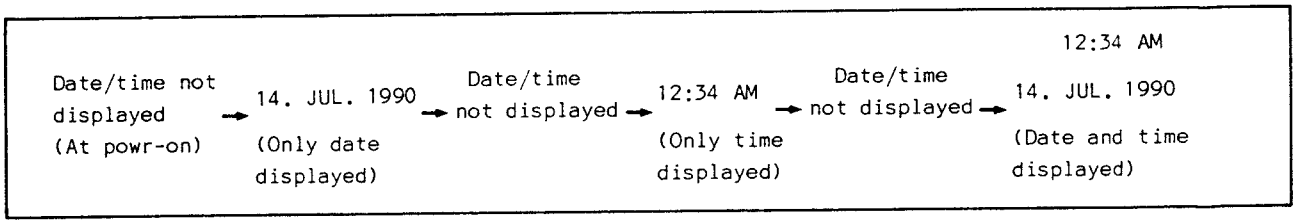
In the CAMERA mode, pressing this button toggles between the full-auto white balance state and the white balance lock state. When the white balance lock state is selected, 'WB LOCK' is indicated on the viewfinder screen.

⑧ DISPLAY button

Pressing this button superimposes a memorized character title on the scene being videographed. When it is pressed again, only the scene is recorded.

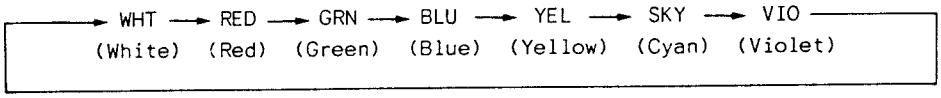
⑨ DATE button

Pressing this button in the CAMERA mode displays the date and/or time on the viewfinder screen. That is, the date/time can be superimposed on the scene during camera recording.



⑩ COLOR button

With any character title and date/time displayd on the viewfinder screen, each press of this button changes the color in a cyclic manner as indicated below.



⑪ FADE button

In the CAMERA mode, holding down this button causes the picture and sound to disappear gradually (fade out). When it is released, they appear gradually (fade in). White fading is performed for approx. four seconds. Note that this white-fading function is not interlinked with the trigger button.

⑫ FOCUS button

In the CAMERA mode, the auto focusing, auto-tracking focusing or manual focusing is selectable by pressing this button. When the auto focusing or auto-tracking focusing is selected, the focus zone is displayed on the viewfinder screen.

⑬ POWER ZOOM button

With this button, the angle of view (frame) can be changed continuously in a range between the wide angle end and telephoto end.

⑭ Battery pack eject switch

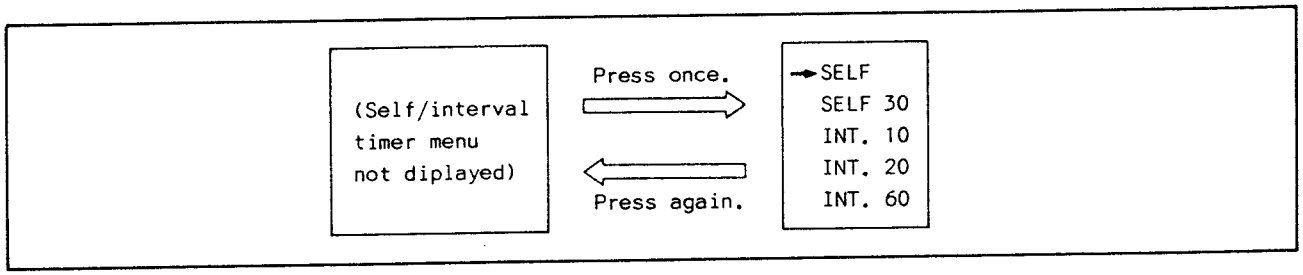
The battery pack can be taken out of the battery box by sliding this switch up.

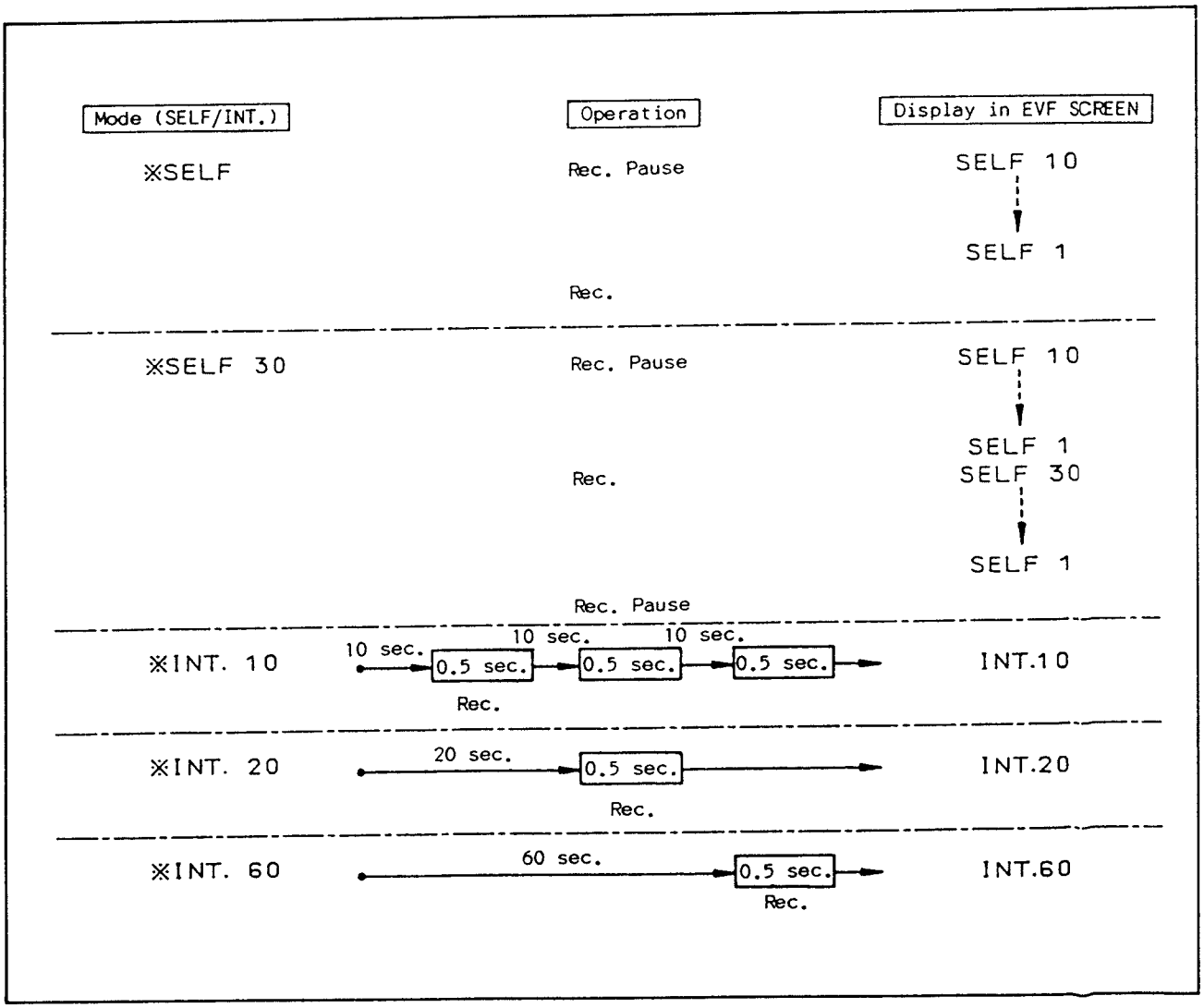
⑮ TAPE SPEED button

SP or LP recording is selectable in the REC PAUSE, FF, REW or STOP mode.

⑯ SELF/INTERVAL TIMER button

The self/interval timer menu is displayed on the viewfinder screen by pressing this button. With the PLUS/MINUS button (+/-), a desired menu item can be selected. When this button is pressed again, the self/interval timer menu disappears from the viewfinder screen.





⑰ CASSETTE EJECT button
In other than the recording mode, the videotape cassette can be ejected by pressing this button. Even in the power-off state, the cassette can be taken out.

⑱ OPERATE button
Used for turning power on/off.

⑲ OPERATE/CAUTION indicator lamp
Under normal condition, this lamp lights up when the OPERATE switch is turned on. In the event of low battery voltage or moisture condensation, it flashes to give warning to the user.

⑳ REWIND button
Pressing this button in the stopped state rewinds the video tape. And, holding it down in the playback mode reproduces pictures in the reverse sequence rapidly at a speed of 7x fast motion. When this button is released, the normal playback operation is resumed. Also, by holding down this button during rewinding, pictures can be reproduced in the reverse sequence rapidly at a speed of 15x fast motion in SP mode or 30x fast motion in LP mode.

㉑ STOP button
Pressing this button causes tape drive to stop.

㉒ COUNTER RESET button
In any mode, pressing this button resets the linear tape counter to zero (0:00:00). When the tape cassette is loaded, the counter is reset automatically. This counter is capable of counting up/down to ±9:59:59.

㉓ RECORDING button
When this button is pressed in the stopped state or the still playback state, the camcorder is set to the recording pause state.

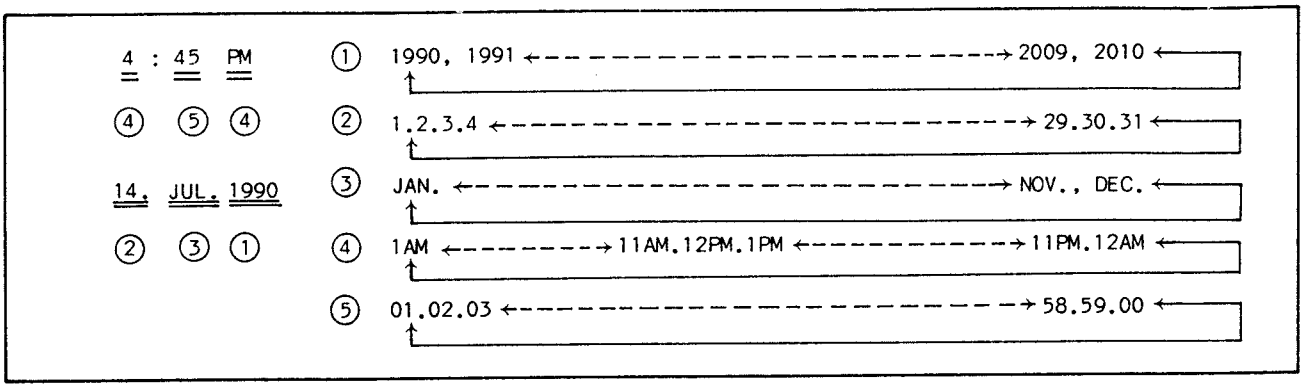
㉔ PAUSE/STILL button
When this button is pressed during playback, the picture is made still. Then, when it is pressed in the still playback mode, the normal playback operation is resumed. When this button is pressed during recording, the recording pause mode is set up. Then, when it is pressed in the recording pause mode, the normal recording is resumed.

㉕ FAST FORWARD button
Pressing this button in the stopped state causes the video tape to be fed fast. And, holding it down in the playback mode reproduces pictures forward rapidly at a speed of 9x fast motion. When this button is released, the normal playback operation is resumed. Also, by holding down this button during fast-forwarding, pictures can be reproduced forward rapidly at a speed of 15x fast motion in SP mode or 30x fast motion in LP mode.

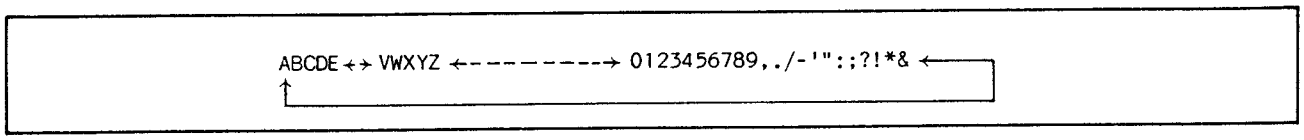
㉖ PLAY button
In other than the recording mode and recording pause mode, pressing this button starts the playback operation. The pictures being played back can be checked on the viewfinder screen. To stop playback, press the STOP button.

㉗ PLUS/MINUS button

° The date (year/month/day) and time (hours/minutes) can be set as desired using these buttons.



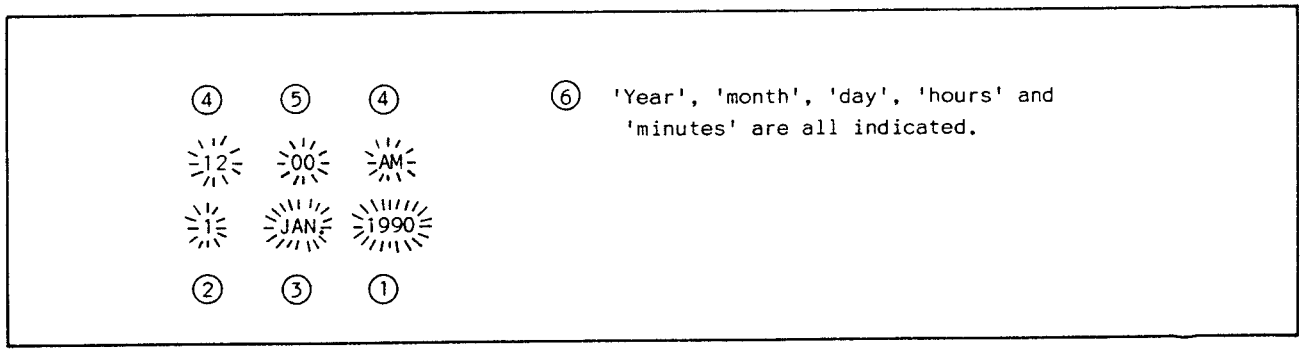
The characters and digits of title can be selected as indicated below.



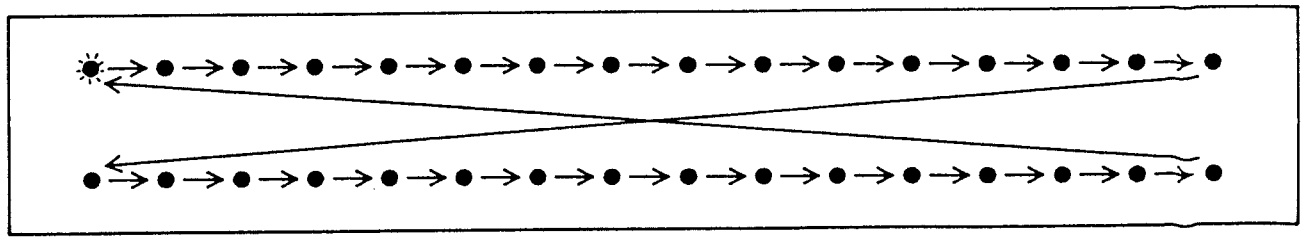
In the line input mode or during camera recording, it is not allowed to create a character title. (Camera recording is not allowed in the line input mode.)
In the recording pause mode, the recorded pictures can be searched by pressing the PULS/MINUS button. (Pressing the PLUS button enables forward searching, and pressing the MINUS button enables backward searching.) When the PLUS/MINUS button is released, the recording pause state is set up again.
By pressing the PLUS/MINUS button momentarily, the recorded picturs are played back for approx. three seconds so that the user can check the recording on tape. After this short playback, the tape is returned to the pause point and the recording pause state is set up again.

㉘ SHIFT button

In the auto date setting, 'year', 'month', 'day', 'hours' and 'minutes' can be selected by pressing this button.



The title character position can be shifted using this button as indicated below.
(16 characters x 2 lines)



㉙ SET C. TITLE/DATE button

When this button is pressed once, the title setting mode is selected. In this mode, any desired title can be set with the SHIFT and PLUS/MINUS buttons. When the SET C. TITLE/DATE button is pressed again, the blinking of title is ceased and the title is stored into memory. When the SET C. TITLE/DATE button is held down for approx. three seconds, the date/time setting mode is selected. In this mode, the user can set 'year, month, day' or 'hours, minutes' with the SHIFT and PLUS/MINUS buttons.

㉚ EDIT button

Used for editing pictures recorded on the videotape. Turn on this button only for editing in the PLAY mode. Deterioration of picture quality can be minimized by turning on this button. In common practice, keep it turned off.

㉛ Remote terminal

Used for assemble editing or other simple editing of recorded pictures. This terminal is connectable to the simple editing unit VE-100EXP/F.

㉜ S-VIDEO OUTPUT terminal

Used on S-video output for Y/C separation.

㉝ AUDIO/VIDEO terminals

Used for normal output of audio and video. For connection with a television unit not equipped with an audio/video input terminal, attach the RF unit RU-100E/AS.

㉞ RF UNIT DC OUTPUT terminal

Used for supplying +5 V power to the RF unit RU-100E/AS.

㉟ STEREO AUDIO OUTPUT terminals

Used for outputting stereo sound.

㊱ START/STOP button

When this button is pressed in the recording pause state, the recording operation is resumed. Pressing it again causes the camcorder to get back to the recording pause state.
In the self/interval timer mode, the self/interval timer function can be started/canceled with this button.

㊲ GRIP UNLOCK button

Turn the multi-action grip while holding down this button, and release it at a favorable grip position. Thus, the multi-action grip can be set to the desired shooting angle.

㊳ Lithium battery compartment

Contains the lithium battery for auto date function.

㊴ STEREO MICROPHONE terminal

Used for connecting the accessory microphone or the monaural microphone available separately.

㊵ HEADPHONE terminal

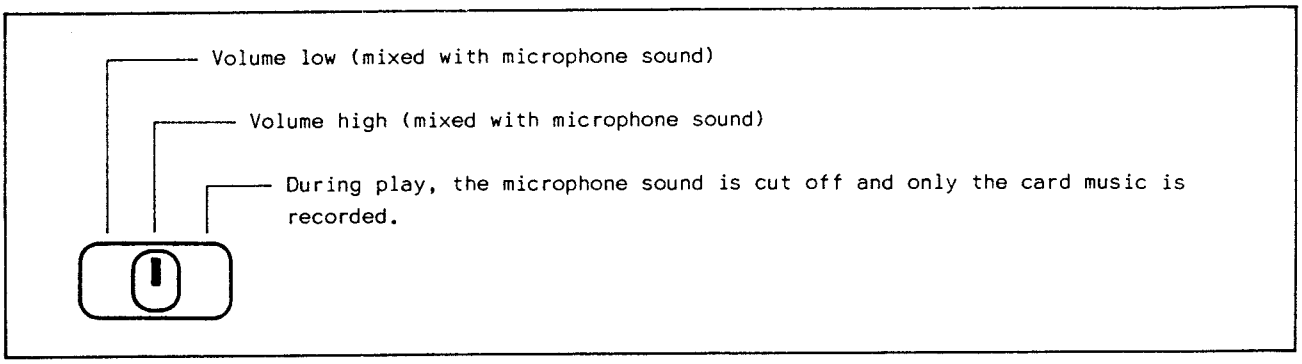
Used for headphone output.

㊶ MICROPHONE DC OUTPUT terminal

Used for supplying DC power to the optional stereo microphone.

㊷ MUSIC VOLUME SELECT switch

Used for adjusting the volume of music sound (music level adjust switch).


Volume low (mixed with microphone sound)
Volume high (mixed with microphone sound)
During play, the microphone sound is cut off and only the card music is recorded.

㊸ MUSIC SELECT button

Pressing this button presents a melody number/title on the viewfinder screen. Then, each press of this button changes a melody number/title to the next one. The user can thus select any one of eight pieces of background music contained in the music IC.
In the recording pause state, the user can hear the introductory part of melody for approx. four seconds through the headphones. Thus, the user can check what music has been selected. The melody number/title indicated on the viewfinder screen disappears automatically in three seconds after it is selected.

㊹ MUSIC ON/OFF button

Press this button to record background music on tape or stop it. The selected melody is played repeatedly until it is turned off with this button. When the melody is turned off, it fades out automatically.

1-4 Information display on electronic viewfinder

The electronic viewfinder in this camcorder lets the user readily know a repertoire of current statues and settings. It displays the camera operating status, recorder operating status, warning message, etc. Still more, the user can select the auto date/title display mode or the timer setting menu mode at a touch of the button.

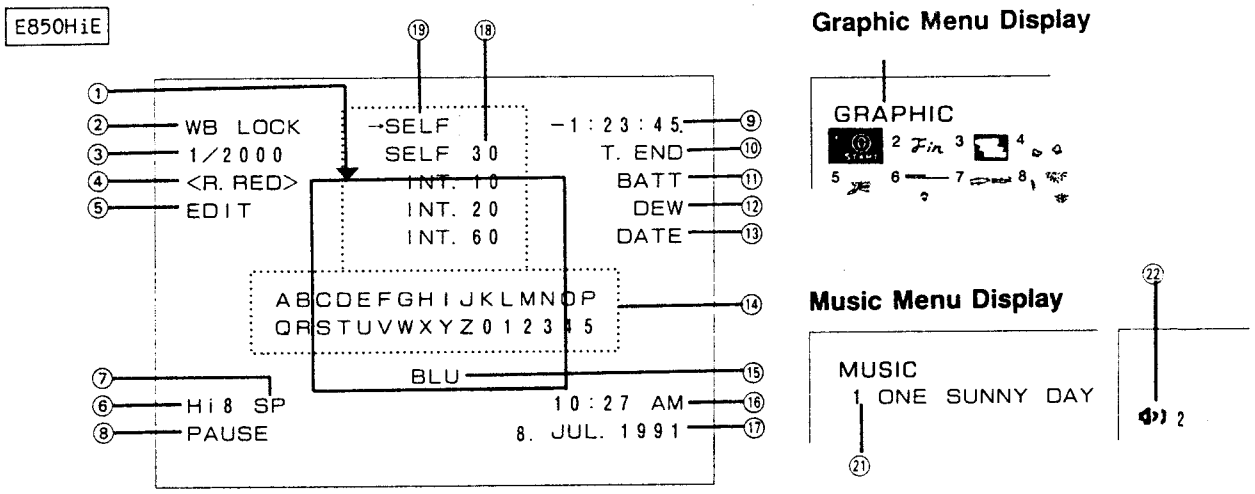
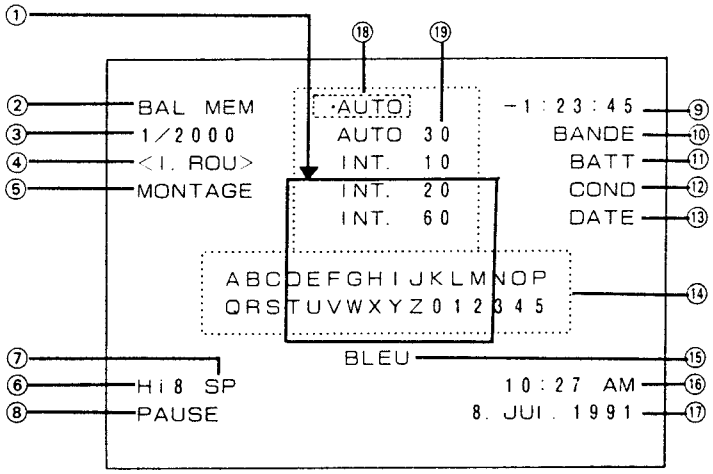


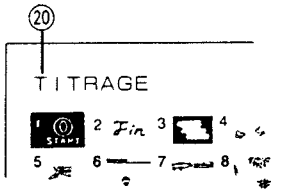
Fig. I-5

No.	Mode	Display	Description
①	Focus mode	(Focus zone)	When AF or Auto Tracking Focus mode is selected, the focus zone is displayed. In Auto Tracking Focus mode, the ATF zone changes in size according to focal depth of the subject.
		No display	The focus zone is not displayed in MANUAL mode.
②	White Balance	No display	Auto white balance
		WB LOCK	White balance lock
③	High-Speed Shutter	No display	Normal shutter speed (1/50)
		1/250	1/250th of a second
		1/500	1/500th of a second
		1/1,000	1/1,000th of a second
		1/2,000	1/2,000th of a second
④	Digital Title Colour	WHT, RED, GRN, BLU, YEL, SKY, VIO, BLK	Digital title colours are displayed. For normal titles, abbreviated colour codes are displayed. Digital title colour selection: white, red, green, blue, yellow, sky blue, violet, black
		<WHT>	See-through colour (The same eight colours can be selected.)
		R.WHT	Reverse colour (The same eight colours can be selected.)
		<R.WHT>	Reverse see-through colour (The same eight colours can be selected.)
⑤	EDIT Mode	EDIT	"EDIT" is not displayed in other modes. When the EDIT button is pressed, "EDIT" appears in viewfinder.
⑥	Hi8	No display	Standard 8mm mode
		Hi8	Hi8 mode
⑦	Tape Speed	SP	Standard Play
		LP	Long Play

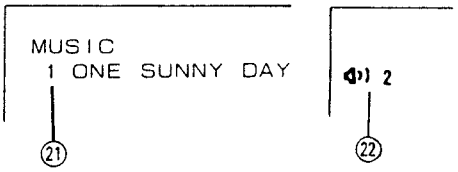
E850HiF



Affichage du choix de graphismes



Affichage du choix de musique



N°	Mode	Affichage	Description
①	Mode de mise au point	(zone de la mise au point)	Si vous sélectionnez les modes automatique AF ou ATF, la zone de mise au point s'affiche. En mode ATF, la zone de mise au point apparaît dans la dimension possible, selon la profondeur de champ du sujet.
		Pas d'affichage	La zone de mise au point ne s'affiche pas en mode manuel.
②	Balance des blancs	Pas d'affichage	Balance automatique des blancs
		BAL MEM	Balance des blancs verrouillée
③	Vitesse d'obturation rapide	Pas d'affichage	Vitesse d'obturation normale (1/50)
		1/250	1/250ème de seconde
		1/500	1/500ème de seconde
		1/1000	1/1 000ème de seconde
		1/2000	1/2 000ème de seconde
④	Couleur de titrage digital	BLANC, ROUGE, VERT, BLEU, JAUNE, CIEL, VIO, NOIR	Les couleurs des titres digitaux sont affichées. Les codes de couleur sont affichés pour les titres normaux. Choix des couleurs de titre: blanc, rouge, vert, bleu, jaune, bleu ciel, violet, noir
		<BLA>	Transparent Possibilité de choisir parmi les huit couleurs précédentes
		I.BLANC	Couleur inversée Possibilité de choisir parmi les huit couleurs précédentes
		<I.BLA>	Transparent inversé Possibilité de choisir parmi les huit couleurs précédentes
⑤	Mode MONTAGE	MONTAGE	L'indication MONTAGE n'est pas affichée dans les autres modes. L'indication MONTAGE apparaît dans le viseur dès que l'on appuie sur la touche MONTAGE
⑥	Hi8	Pas d'affichage	Mode normal 8mm
		Hi8	Mode Hi8
⑦	Vitesse de la bande	SP	Vitesse normale
		LP	Doublement de la durée de la cassette

No.	Mode	Display	Description
⑧	Operation	PAUSE	Record pause
		REC	Recording
		PLAY	Normal playback, fast forward playback (9X), or rewind playback (7X)
		STILL	Still playback
		STOP	Stop
		FF	Fast forward
		REW	Rewind
		EJECT	Eject function is operated.
		EJECT (flashes)	Safety mechanism functions
⑨	Tape Counter	– 9:59:59 to 9:59:59	Tape counter reading
⑩	Tape Status	TAPE (flashes)	No cassette is loaded.
		T.END	Tape reaches the end.
⑪	Battery Warning	BATT (flashes)	Battery charge is nearly exhausted.
⑫	Condensation	DEW (flashes)	Condensation is detected in camera (see p.68).
⑬	Lithium Battery Warning	DATE (flashes)	Lithium battery charge is low or no battery is inserted.
⑭	Character Title	2 lines × 16 characters	Alphabet: A to Z Special Characters and Accents: ÄÖÜØÅÆÑÇË Numerals: 0 to 9 Symbols: ,/_' '':;?!*&
⑮	Character Title Colour	WHT, RED, GRN, BLU, YEL, SKY, VIO	Character title and date/time colour codes are displayed. Character title and date/time colour selection: white, red, green, blue, yellow, sky blue, violet
⑯	Time	12:00 AM to 11:59 PM	Present time
⑰	Date	1. JAN. 1990 to 31. DEC. 2010	Current date
⑱	Timer Recording Menu	→SELF SELF 30 INT.10 INT.20 INT.60	→ Arrow indicates selected mode.
⑲	Timer Recording	0SEC—10SEC	Recording reminder
		SELF10—SELF1	Self-timer countdown
		SELF30—SELF1	Self 30 recording
		INT.10	10 sec. interval recording
		INT.20	20 sec. interval recording
		INT.60	60 sec. interval recording
⑳	Graphic Menu	Eight graphic symbols	Press SELECT (graphic) button to display menu.
㉑	Music Menu	Music title	Only one music title at a time is displayed in the viewfinder.
㉒	Music Recording	1—8	Displayed when music is in use.

N°	Mode	Affichage	Description
⑧	Fonctions	PAUSE	Pause tournage
		ENR.	Tournage
		LECT.	Lecture normale, lecture en avance rapide (9X) ou lecture en rembobinage (7X)
		ARRET	Arrêt sur image
		STOP	Arrêt
		AVAN.	Avance
		RET.	Rembobinage
		EJECT	Ejection de la cassette
		EJECT (clignote)	Déclenchement du mécanisme de sécurité
⑨	Compteur de bande	– 9:59:59 à 9:59:59	Chiffres du compteur
⑩	Bande	BANDE (clignote)	Il n'y a pas de cassette dans le camescope
		BANDE	Fin de bande
⑪	Batterie	BATT (clignote)	La batterie arrive à épuisement
⑫	Condensation	COND (clignote)	De la condensation a été détectée dans l'appareil (cf. page 72)
⑬	Batterie lithium	DATE (clignote)	La pile lithium arrive à épuisement ou absence de pile dans l'appareil.
⑭	Titre	2 lignes × 16 caractères	Lettres de l'alphabet: A à Z Chiffres: 0 à 9 Symbôles: , / _ ' " : ; ? ! * & ç
⑮	Couleur de titrage	BLANC, ROUGE, VERT, BLEU, JAUNE, CIEL, VIO	Choix des couleurs de titre: blanc, rouge, vert, bleu, jaune, bleu ciel, violet
⑯	Heure	12:00 AM à 11:59 PM	Les heures avant midi sont suivies de l'indication AM, les heures après-midi sont suivies de l'indication PM.
⑰	Date	JAN. 1. 1990 à DEC. 31. 2010	Date courante
⑱	Menu du retardateur	→AUTO AUTO 30 INT.10 INT.20 INT.60	→ La flèche indique le menu sélectionné.
⑲	Retardateur	0SEC — 10SEC	Aide-mémoire de tournage
		10SEC — 1SEC	Compte à rebours du retardateur
		30SEC — 1SEC	Retardateur réglé sur 30 secondes
		INT.10	Intervalle de tournage réglé sur 10 sec.
		INT.20	Intervalle de tournage réglé sur 20 sec.
		INT.60	Intervalle de tournage réglé sur 60 sec.
⑳	Choix de graphismes	Symboles de huit graphismes	Appuyez sur la touche de sélection (graphisme) pour afficher le choix.
㉑	Choix de musique	Titre de musique	Un seul titre à la fois s'affiche dans le viseur.
㉒	Enregistrement de musique	♪ 1—8	Affiché lorsque la musique est utilisée.

1-5 E850Hi video system chart

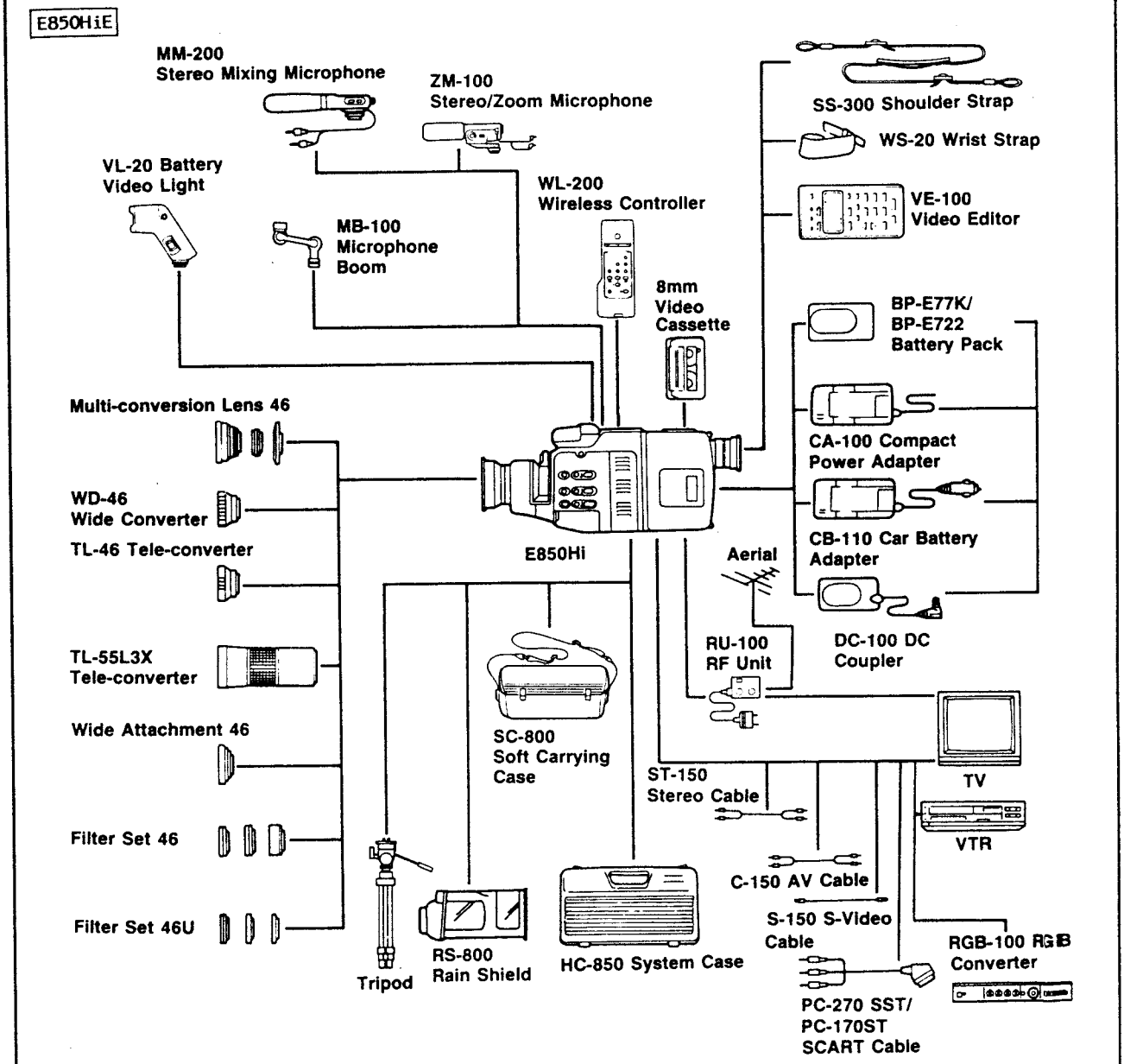


Fig. I-6

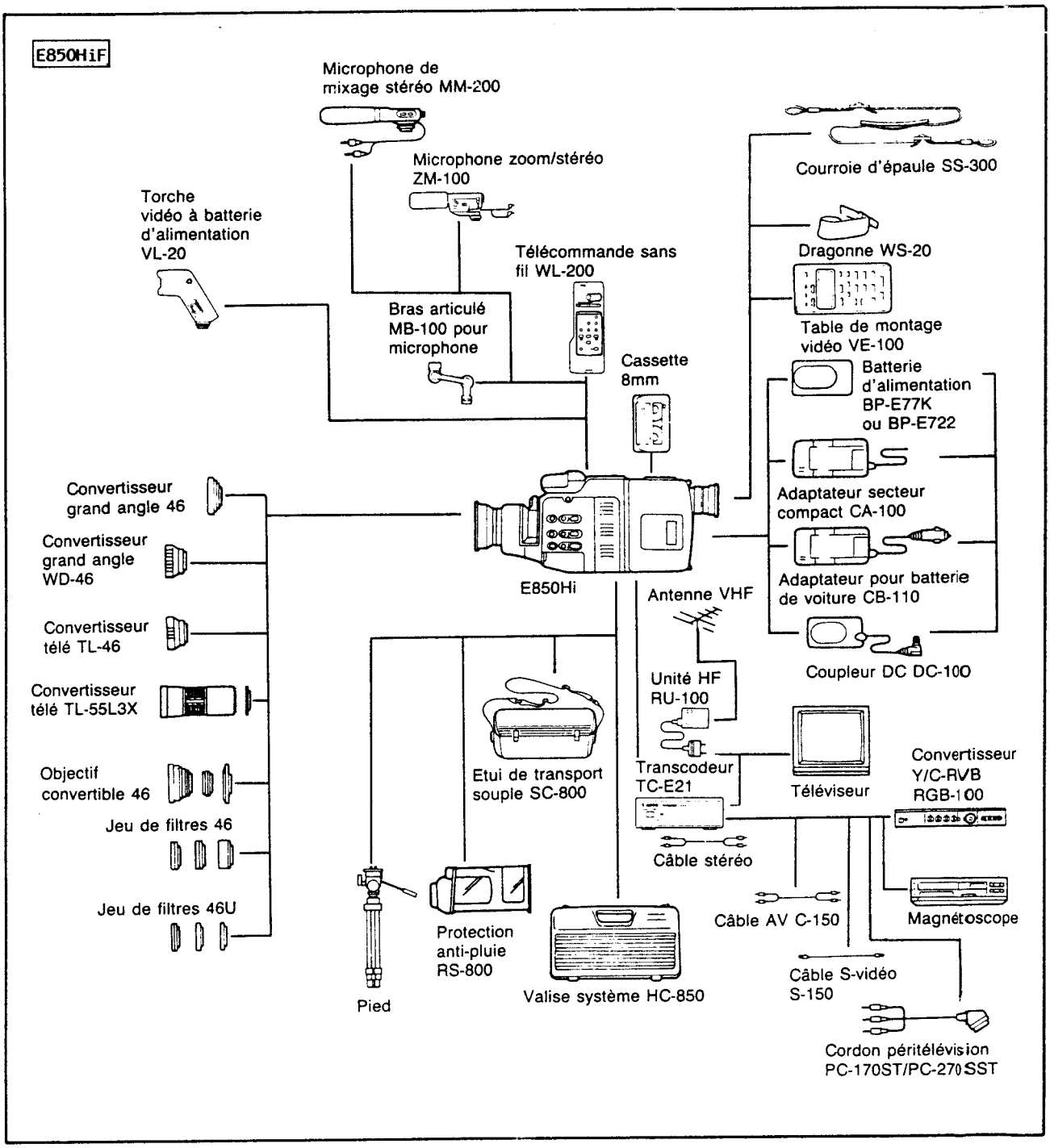

E850HiF
Microphone de mixage stéréo MM-200
Microphone zoom/stéréo ZM-100
Torche vidéo à batterie d'alimentation VL-20
Télécommande sans fil WL-200
Bras articulé MB-100 pour microphone
Cassette 8mm
Courroie d'épaule SS-300
Dragonne WS-20
Table de montage vidéo VE-100
Batterie d'alimentation BP-E77K ou BP-E722
Adaptateur secteur compact CA-100
Adaptateur pour batterie de voiture CB-110
Coupleur DC DC-100
Convertisseur grand angle 46
Convertisseur grand angle WD-46
Convertisseur télé TL-46
Convertisseur télé TL-55L3X
Objectif convertible 46
Jeu de filtres 46
Jeu de filtres 46U
E850Hi
Antenne VHF
Unité HF RU-100
Transcodeur TC-E21
Téléviseur
Convertisseur Y/C-RVB RGB-100
Câble stéréo
Etui de transport souple SC-800
Protection anti-pluie RS-800
Pied
Valise système HC-850
Câble AV C-150
Magnétoscope
Câble S-vidéo S-150
Cordon péritélévision PC-170ST/PC-270SST

Fig. I-7

2. New Technologies

IC TITLE/MUSIC system

The IC TITLE/MUSIC system incorporated in this camcorder allows the user to record video titles and background music, which are stored in the chips, together with images and sounds being taken.

The conventional titling functions contained in video cameras have been implemented using built-in character generators or digital title memories. In this system, eight multi-color titles (characters and illustrations) are stored in IC chip, and the user can select and record any one of these high-quality titles.

The user can also add background music by selecting one of eight melodies that are stored in IC chip, without using a portable stereo tape recorder or mixing microphone.

2-1 System functions and operations

Eight titles are stored in IC chip. After selecting any one of these titles, the user can make it disappear or reappear using the TITLE ON/OFF key.

When the title is turned on/off or it is being displayed, its image effect is made as specified with the pattern. Up to 15 title colors are preselectable according to the pattern. (64 colors are supported for multi-coloring, but up to only 15 colors are usable per title. That is, 1 to 15 color values are taken for each title pattern.)

A title can be chosen from the SELECT menu presented on the viewfinder screen. The SELECT menu has a list of title numbers and schematic outlines (eight pairs per SELECT menu). One of them is highlighted in reverse video, i.e. the user can choose the highlighted title number with the TITLE SELECT key.

Since the title chip and the digital title memory (D. MEMO) use the same memory function in the camera, they cannot be used at the same time. If the TITLE SELECT key is pressed, the D. MEMO stored in the memory function is replaced with the contents of the SELECT menu.
However, simultaneous display of character title, date, time and IC title is possible.

Eight melodies are recorded in each music IC. A desired melody can be selected by the SELECT key. After selecting any one of these melodies, the user can turn it off/on using the MUSIC ON/OFF key. (The SELECT menu has a list of melody numbers and names.) When the selected melody is turned off, it automatically fades out. While it remains on, it is played repeatedly. The volume of background music can be set to "Hi", "Low", or "Music Only" by the slide switch (the sound from the microphone is cut off and only the background music is recorded).

The title and music ICs are not interlinked with the REC. START/STOP button. The functions of these ICs are controlled with the ON/OFF key.

2-2 Titling operation

A title consists of four areas, which are freely arranged or overlapped on each other. Area shape has three patterns, and one is selected from them according to the contents of the title.

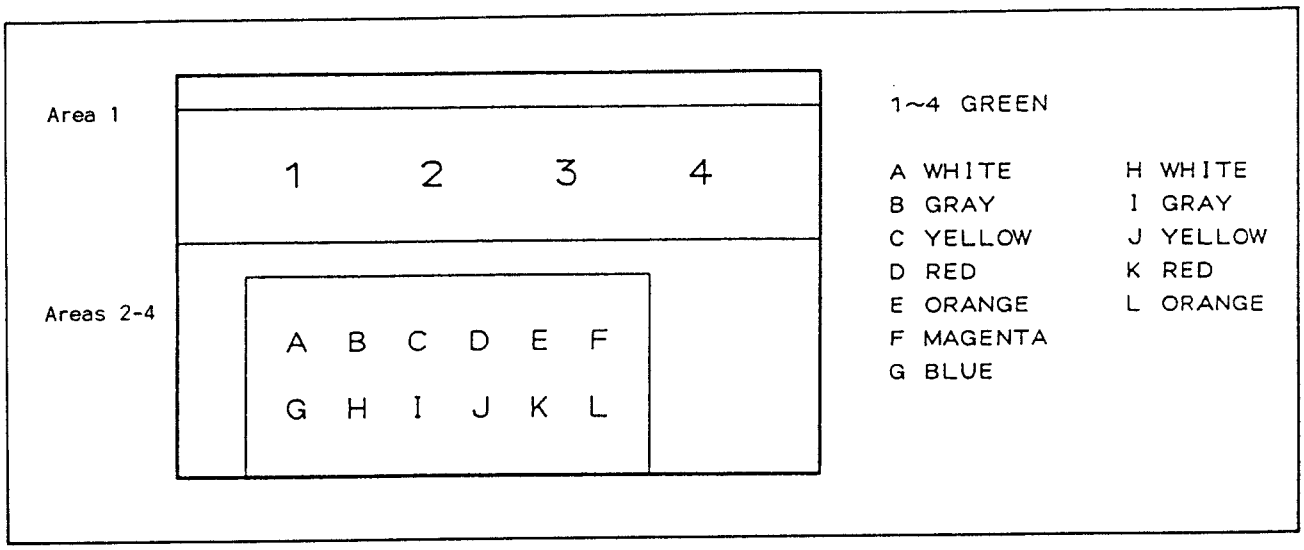


Fig. I-8

Numerals are superimposed in single color (Green) in area 1 (Horizontal oblong pattern). Alphabetic characters A-L are superimposed in seven colors in areas 2-4 which are overlapped on each other. These eight colors are represented in 4 bits (because four areas are used) as indicated in the following table. (Table I-1)

	Area 1	Area 2	Area 3	Area 4
GREEN	1	0	0	0
WHITE	0	0	0	1
GRAY	0	0	1	0
YELLOW	0	0	1	1
RED	0	1	0	0
ORANGE	0	1	0	1
MAGENTA	0	1	1	0
BLUE	0	1	1	1

Table I-1

The data of each area is arranged according to the table as in the next page. (Fig. I-9)

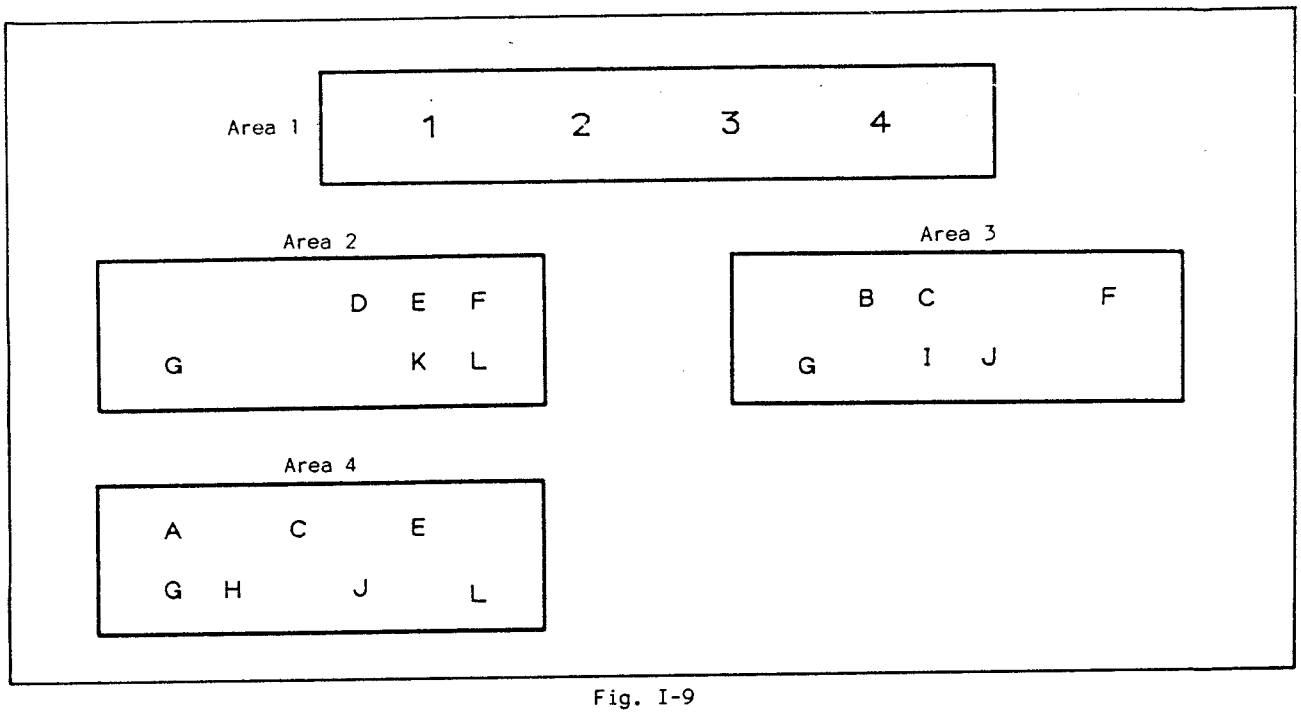


Fig. I-9

The data of the above four areas is compressed and stored in the memory of the title IC. It is compressed by the method shown below (Data compression).

The above data and the parameter/color data are stored in the IC. (Fig. I-10)

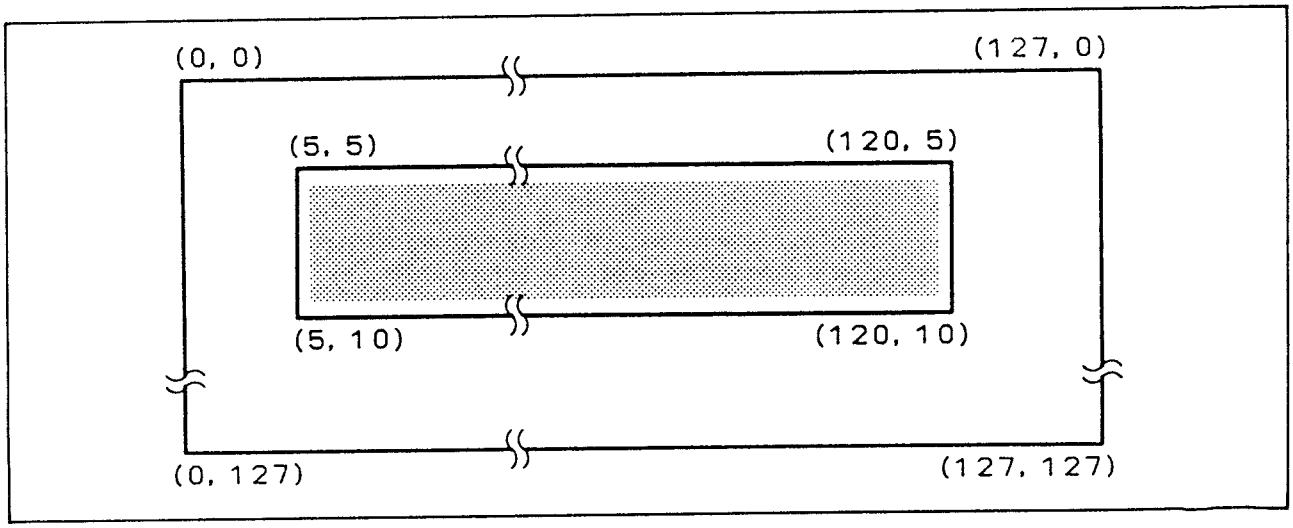


Fig. I-10

The correlation of the above pattern in the vertical direction is checked (the part where two lines are different from each other is set to 1, and the part where two lines are the same is set to 0).

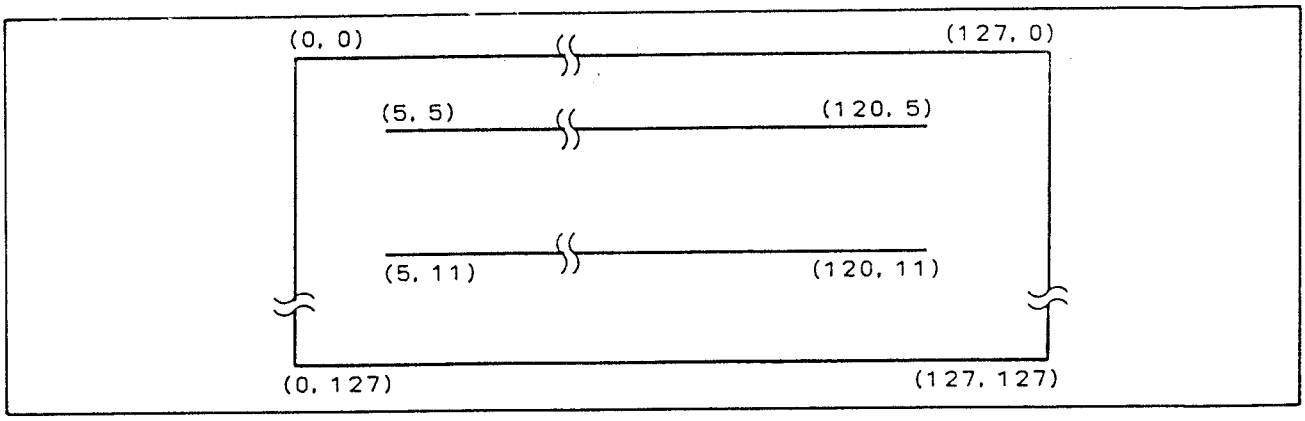


Fig. I-11

As a result, the above pattern is obtained. The pattern indicates that there is no correlation at the parts of the horizontal lines. The number of consecutive 1's or 0's is stored as shown in the following table. (Fig. I-12)

646	116	659	116	14848
0	1	0	1	0

Fig. I-12

2-3 Title display

With IMPOSE ON, the compressed data is sent from the title IC through the IC control microcomputer (where it is converted into normal data) and written in S-RAM under direction of the IC control microcomputer.

The written data is read according to the area position data and positioned in the screen. At this step, scrolling and moving of a specific area on the screen (after it is displayed) can be performed by adjusting the area position data (X-Y address).

Colors are selected from the color patterns Table I-2 by inputting the following data to the title IC.

Palette	Color	Palette	Color
1	WHITE	9	——
2	GRAY	10	——
3	YELLOW	11	——
4	RED	12	——
5	ORANGE	13	——
6	MAGENTA	14	——
7	BLUE	15	——
8	GREEN	16	——

Table I-2

Each color palette has outputs of R, G and B, each consisting of two bits (R1, R0, G1, G0, B1 and B0).

Each color of R, G and B can be set to 100%, 67%, 33% and 0% through digital-analog conversion. The outputs of Y, R-Y and B-Y can be obtained through matrix. At this step, up to 64 colors can be produced by combining these signals.

The signals of Y, R-Y and B-Y arranged in matrix are be superimposed, i.e. according to CBLK pulse (analog switch), these signals are replaced with the image being taken.

2-4 Operation of music IC

Sound sources of eight melodies (waveform and envelope) and percussion are stored in the music IC. By programming notes, those notes can be output as analog signals.

The audio signal output from the music IC is an analog audio signal.

The operation of the music IC and fade-out effect are controlled by the microcomputer.

2-5 Graphic chip format

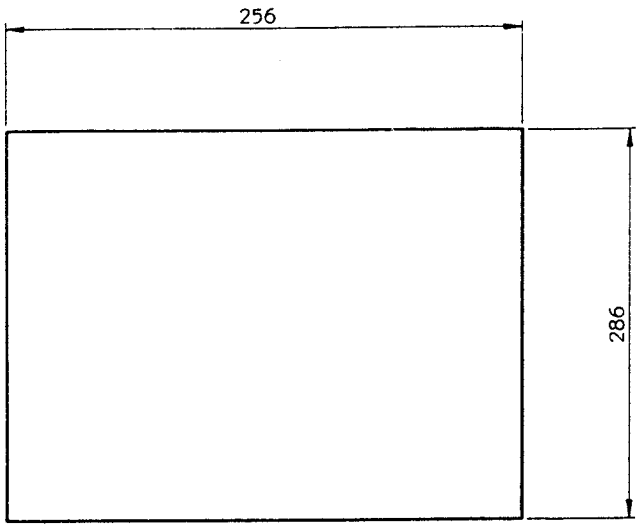
(1) Size of the display screen

a. Displayable area:
   256 dots (Horizontal)
   286 dots (Vertical)

b. Ratio width to hight of screen:
   4 (Width) : 3 (Height)

c. Shape of dot:
   3 (Width) to 2 (Height)

(Shape of dot)

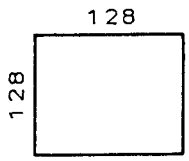


Display screen

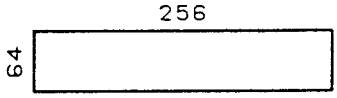
(2) Pictures in one screen are expressed by four areas. Those areas are called area 1, area 2, area 3 and area 4.

(3) Shape of area

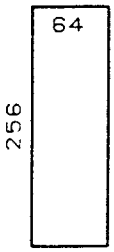
a. Square (128 dots x 128 dots)
b. Horizontal oblong (256 dots x 64 dots)
c. Vertical oblong (64 dots x 256 dots)



a. Square



b. Horizontal oblong



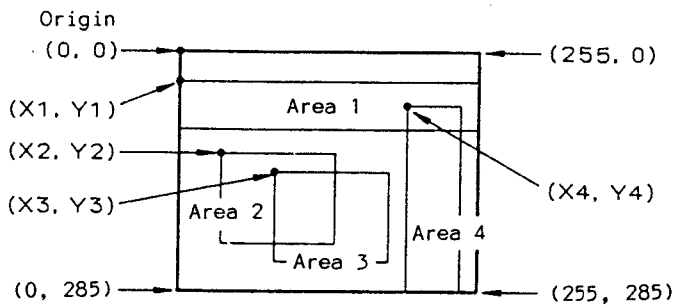
c. Vertical oblong

(4) Positioning of area

a. The upper left corner of the playable area is the origin (0, 0).
b. The upper left corner of each area is its display position (X, Y).
c. Each area can be positioned freely (-256, -256)-(255, 285).
d. Areas can be overlapped on each other.

Origin (0, 0)

(X1, Y1) Display position of area 1
(X2, Y2) Display position of area 2
(X3, Y3) Display position of area 3
(X4, Y4) Display position of area 4



(5) Display color

a. Usable colors:
64 colors produced by 2 bits each of red (R), green (G), and blue (B).
Four levels of 0%, 33%, 67%, and 100% and background color.

b. Number of displayable:
16 color maximum depending on overlapping areas

c. Examples:

◦ When no areas are overlapped, ...
↓
1 color for each area, and background color 1, 5 colors in total.

◦ When two couples of areas are overlapped on each other, ...
↓
3 colors are made by each couple, and background color 1, 7 colors in total.

◦ When three areas are overlapped on another and one is not overlapped, ...
↓
7 colors are produced by three overlapped areas, and background color 1, 9 colors in total.

◦ When four areas are overlapped on another, ...
↓
16 colors are made by four overlapped areas, 16 colors in total.

3. Circuit Description

3-1 IC title and IC music functions

(1) Basic circuit configuration

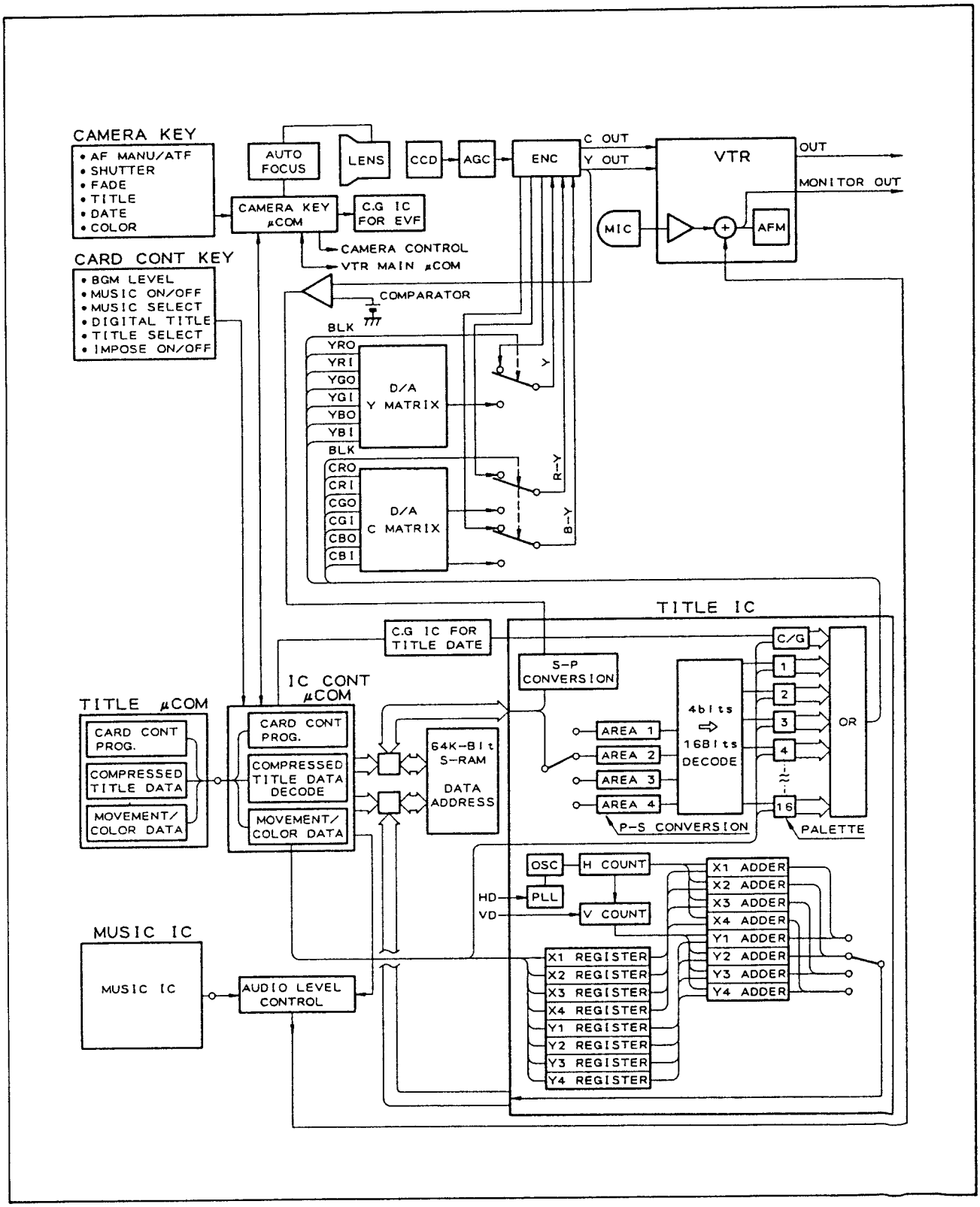


Fig. I-13

(2) At selection of title (Title data → S-RAM)

When the title select switch is pressed, the TITLE-REQUEST signal is output from pin (8) of the TITLE/MUSIC control microcomputer to the TITLE microcomputer.

Upon receiving this signal, the TITLE microcomputer returns the S-CLOCK signal to pin (75) of the TITLE/MUSIC control microcomputer. Thus, serial data communication is carried out between the TITLE/MUSIC control microcomputer and the TITLE microcomputer.

Then, the compressed image data is read out in an expanded form and it is written into the S-RAM (IC3004). If any error occurs during serial data communication, the TITLE-RESET signal is output from pin (15) of the TITLE/MUSIC control microcomputer to the TITLE microcomputer for initializing it.

The TITLE microcomputer contains the image data, color/motion data and control program. (The image data is stored in a compressed form.)

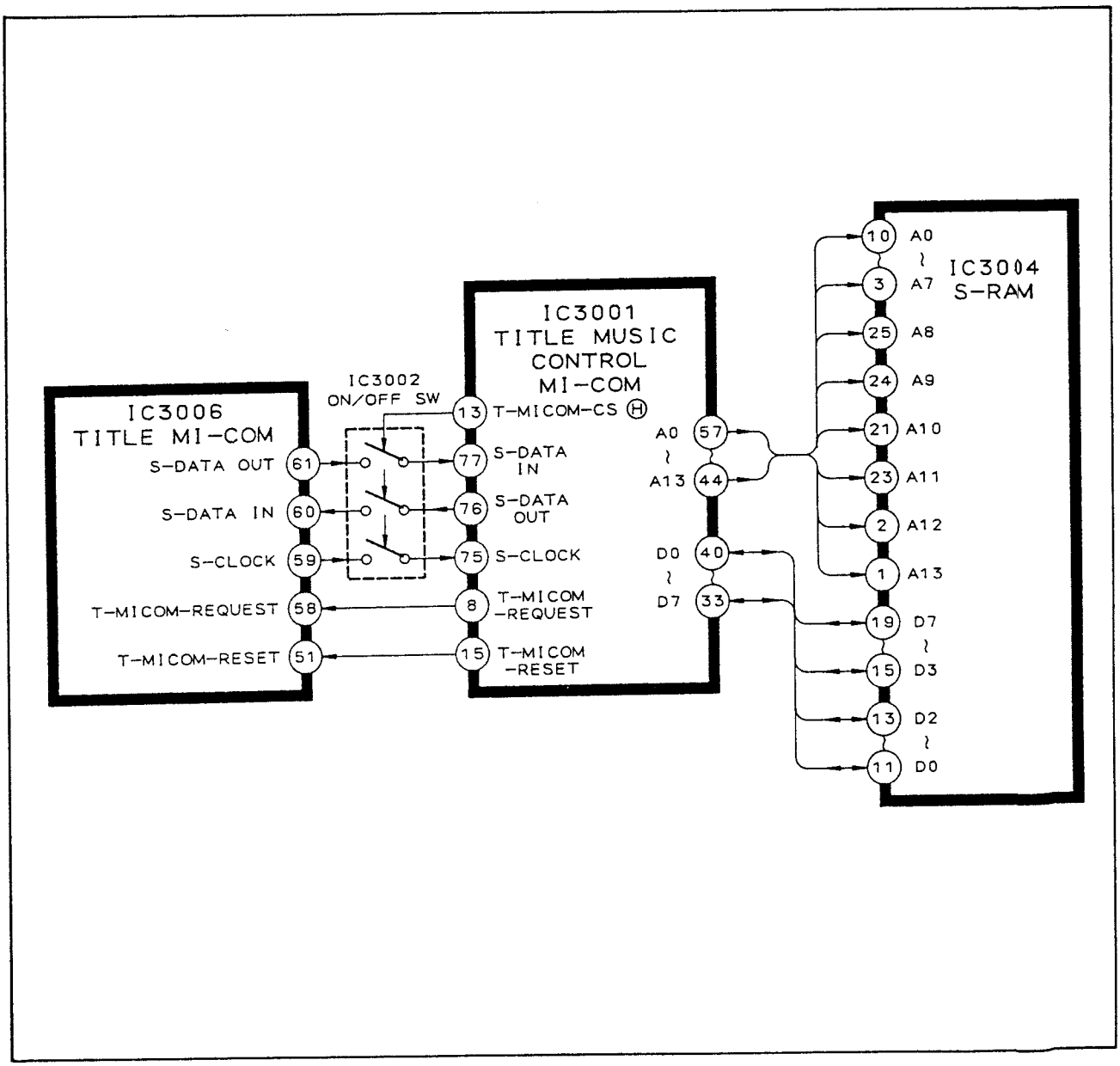


Fig. I-14

When the image data is written into the S-RAM, the color/motion data is read out of the TITLE microcomputer through serial communication. The color/motion data is supplied to the command analysis circuit for conversion into control data. The control data thus attained is fed to pin (50) of the TITLE IC (IC3003). According to this control data, the TITLE IC reads out the S-RAM data and displays it.

The color data signals are output from pins (33) through (38) of the TITLE IC. Also, from pin (7) of IC2151 on the AUTO FOCUS C.B.A., the digital memory signal (binary signal) is input to pin (49) of the TITLE IC and then written into the S-RAM.

In digital title recording, the character/title signal is input from pin (9) of IC3005 (character generator IC) to pin (23) of the TITLE IC and mixed with the S-RAM data.

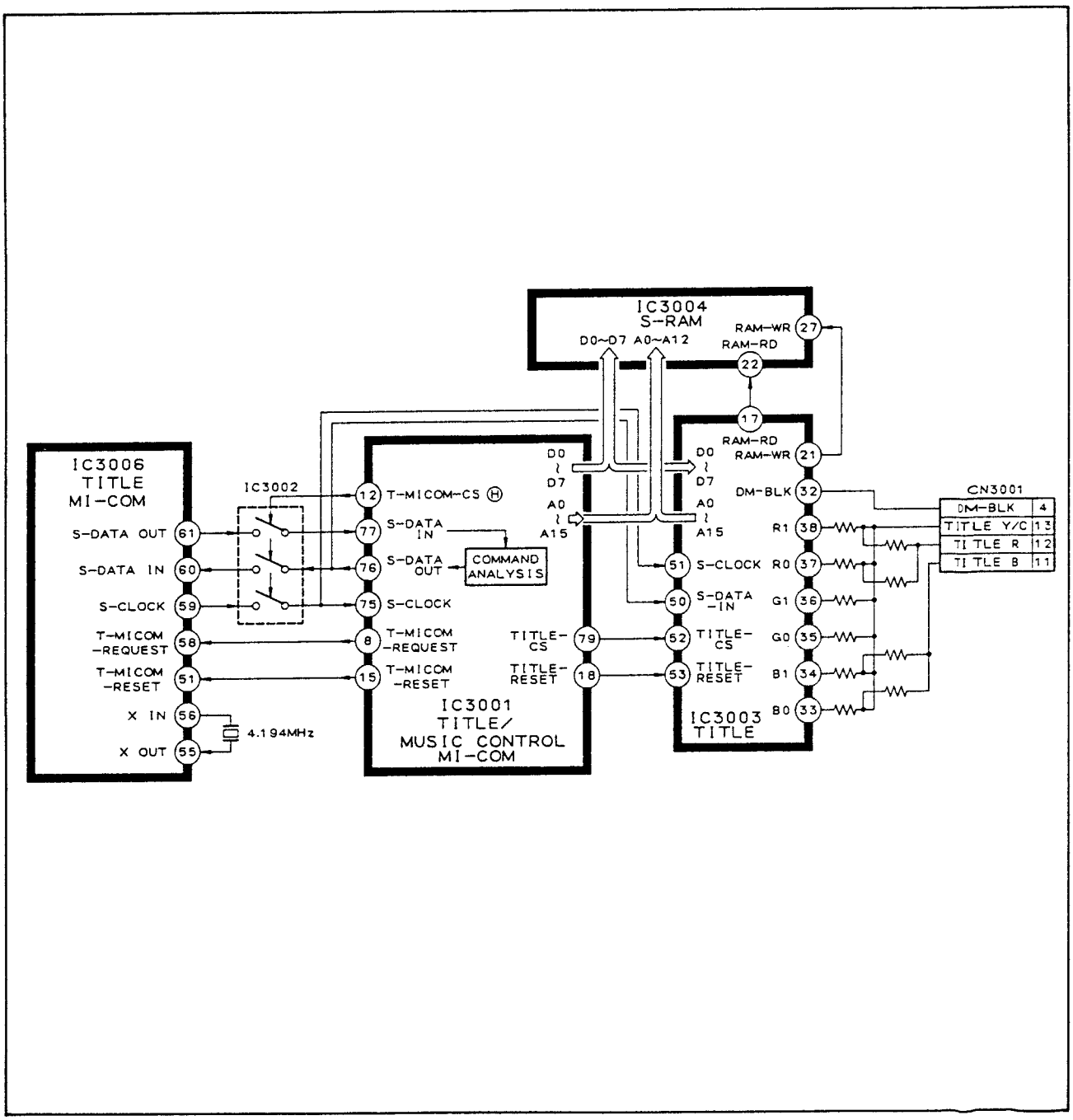


Fig. I-15

(3) At selection of melody (MUSIC IC → AV C.B.A.)

When the MUSIC SELECT button is pressed to choose one of eight melodies, the relevant melody number signal is sent from pins (8) through (11) (4 bits) of the TITLE/MUSIC control microcomputer to the MUSIC IC. Then, the START (H) signal is input from pin (14) of the TITLE/MUSIC control microcomputer to the MUSIC IC. On receipt of this signal, the MUSIC IC produces melody output from pin (23).

After passing through the amplifier Q3101, this melody output is adjusted to a preset volume level by Q3102. (The volume level signal is input from SW3013 to pin (58) of the TITLE/MUSIC control microcomputer, and it is output from pin (17) as the MUSIC LEVEL signal for controlling the Q3102.)

Thereafter, the high-sound noise contained in the digital audio signal is cut off through the low-pass filter, and it is fed to the AV C.B.A. via the FADE circuit and the AUTO FOCUS C.B.A.

The monaural (L+R) signal input to the AV C.B.A. (pin (6) of IC903) is connected to the audio circuit.

Pin (18) of the TITLE/MUSIC control microcomputer is connected with Q952 of the AV C.B.A. When 'MUSIC ONLY' is selected with SW3013, the microphone sound is cut off.

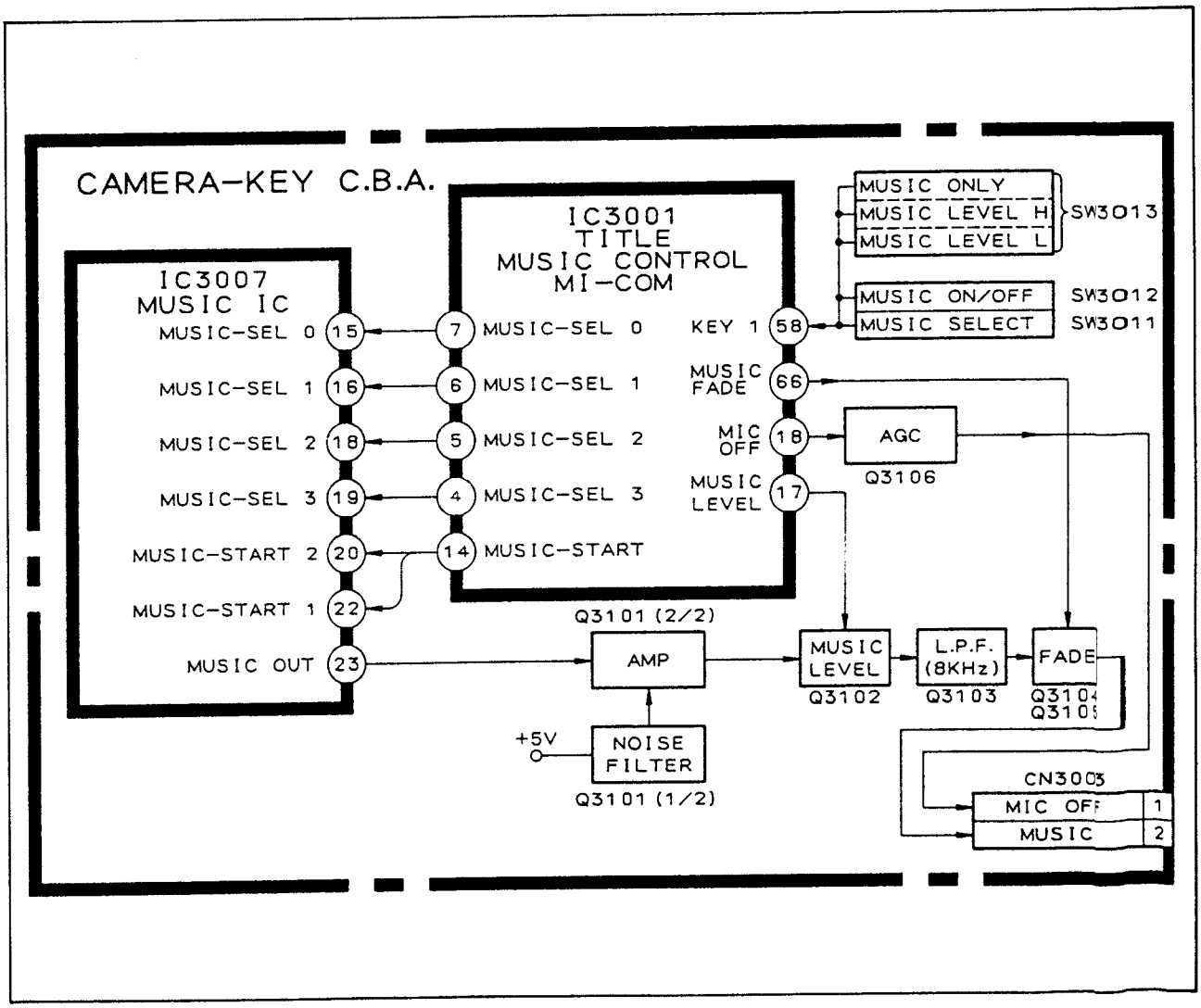


Fig. I-16

3-2 Pin functions of TITLE/MUSIC control microcomputer (IC3001)

Table I-3 (1/2)

Pin No.	Signal designation	I/O	Function
1	-	-	Unused.
2	CG-STROBE Ⓗ	O	Strobe signal for communication with the character generator IC (IC3005).
3	-	-	Unused.
4 | 7	MUSIC-SEL3 | MUSIC SEL0	O	Music (melody) number signal.
8	T-MICOM REQUEST	O	Communication request signal to the TITLE microcomputer (IC3006).
9 | 12	-	-	Unused.
13	T-MICOM-CS Ⓗ	O	Chip select signal for serial communication with the TITLE microcomputer (IC3006). Serial communication is allowed while this signal is 'High'.
14	MUSIC-START Ⓗ	O	Music start signal.
15	T-MICOM-RESET Ⓛ	O	Reset signal to the TITLE microcomptuer.
16	CI-CS Ⓗ	I	Chip select signal for serial communication with the CAMERA-KEY microcomputer (IC2101). Serial communication is allowed while this signal 'High'.
17	MUSIC LEVEL	O	Music volume level control signal.
18	MIC OFF	O	Microphone control signal.
19	VD	I	Vertical sync signal.
20	WRITE Ⓛ	O	Write-in signal to the S-RAM (IC3004).
21	READ Ⓛ	O	Read-out signal to the S-RAM (IC3004).
22 ≀ 24	-	-	Unused.
25	Vss	I	Connected with ground.
26	RESET Ⓛ	I	Microcomputer reset signal.
27	-	-	Unused.
28	X IN	I	Connected with 8 MHz crystal oscillator.
29	X OUT	O	
30 31	-	-	Unused.
32	Vss	I	Connected with ground.
33 | 40	D7 | D0	I/O	Data bus.
41	-	-	Unused.
42 | 57	A15 | A0	O	Address bus.
58	KEY 1	I	Key matrix signal.
59	KEY 0		
60 | 65	-	I	Connected with ground.
66	MUSIC FADE	O	Music fade signal.
67	SAMPLE LEVEL	O	Digital memory sampling threshold signal.

Table I-3 (2/2)

Pin No.	Signal designation	I/O	Function
68	DA VREF.	I	Connected with CAMERA 5V.
69	AD VREF.		
70	Vss	I	Connected with ground.
71 72	Vcc	I	Connected with CAMERA 5V.
73	Vss	I	Connected with ground.
74	CI-REQUEST Ⓛ	I	Communication request signal from the CAMERA-KEY microcomputer (IC2101).
75	S-CLOCK	O	Clock signal for serial communication with the CAMERA-KEY microcomputer (IC2101), TITLE IC (IC3003), character generator (IC3005), and TITLE microcomputer (IC3006).
76	S-DATA OUT	O	Data output for serial communication with the CAMERA-KEY microcomputer (IC2101), TITLE IC (IC3003), character generator (IC3005), and TITLE microcomputer (IC3006).
77	S-DATA IN	I	Data input for communication with the CAMERA-KEY microcomputer (IC2101) and TITLE microcomputer (IC3006).
78	TITLE-RESET Ⓛ	O	Reset signal to the TITLE IC (IC3003).
79	TITLE-CS Ⓗ	O	Chip select signal for serial communication with the TITLE IC (IC3003). Serial communication is allowed while this signal is 'High'.
80	-	-	Unused.

3-3 Pin functions of title IC (IC3003)

Table I-4 (1/2)

Pin No.	Signal designation	I/O	Function
1	VDD	I	Connected with CAMERA 5V.
2 | 4	D2 | D0	I/O	S-RAM data input/output.
5 | 12	A0 | A7	O	S-RAM address output.
13	A12		
14	A10		
15	VDD	I	Connected with CAMERA 5V.
16	Vss	I	Connected with ground.
17	RAM-RO Ⓛ	I/O	S-RAM enable input/otuput.
18	A11	O	S-RAM address output.
19	A9		
20	A8		
21	RAM-WR Ⓛ	I/O	S-RAM write pulse input/output.
22	TITLE BACK	I	Character title signal input.
23	TS	I	Title mask input.
24	CHARACTER 1	I	Character title signal input.
25	VD	I	V-sync signal input.
26	HD	I	H-sync signal input.
27	PD	O	PLL phase comparison output.

Table I-4 (2/2)

Pin No.	Signal designation	I/O	Function
28	X IN	I	Connected with 10 MHz LC oscillator.
29	X OUT	O	
30	Vss	I	Connected with ground.
31	VDD	I	Connected with CAMERA 5V.
32	DM BLK	I	Mask pulse output.
33	B0	O	Title signal B output.
34	B1		
35	G0	O	Title signal G output.
36	G1		
37	R0	O	Title signal R output.
38	R1		
39	Vss	-	Connected with ground.
40	T IN2	I	Used for testing in plant
41	Vss	I	Connected with ground.
42	A14	I	S-RAM select input (selection with 1,0).
43	A15		
44	WRITE Ⓛ	I	S-RAM write-enable signal.
45	READ Ⓛ	I	S-RAM output-enable signal.
46	-	-	Unused.
47	Vss	I	Connected with ground.
48	T IN1	I	Connected with ground.
49	Y (DM OUT)	I	Digital memory image input.
50	S-DATA IN	I	Data for serial communication with the TITLE/MUSIC control microcomputer (IC3001) and character generator (IC3005).
51	S-CLOCK	I	Clock signal for serial communication with the TITLE/MUSIC control microcomputer (IC3001) and character generator (IC3005).
52	TITLE-CS Ⓗ	I	Chip select signal for serial communication with the TITLE/MUSIC control microcomputer (IC3001).
53	TITLE-RESET Ⓛ	I	Reset signal input.
54 | 58	D3 | D7	I/O	S-RAM data input/output.
59	-	-	Unused.
60	Vss	I	Connected with ground.

3-4 Pin functions of CAMERA-KEY microcomputer (IC2101)

Table I-5 (1/2)

Pin No.	Signal designation	I/O	Function
1	RESET Ⓛ	I	Microcomputer reset input.
2	-	I	Connected with ground.
3	Vss	I	Connected with ground.
4	VREF	I	Connected with SS 5V.
5	KEY IN 0	I	Key matrix signal.
6	KEY IN 1		
7	PAL Ⓗ/F-PAL Ⓛ	I	For PAL/F-PAL scheme selection.
8	TEST	I	Used for testing in plant.
9	VDD	I	Connected with SS5V.
10 | 13	-	-	Connected with ground.
14 15	AF MODE 1 AF MODE 2	O	AF mode control output MODE / AF MODE 1 / AF MODE 2 AF: H / H ATF: L / H MANUAL: - / L
16	RAM-CS Ⓛ	O	Communication enable signal for the digital title memory S-RAM. When the digital title mode is selected, this signal goes 'Low' to enable communication between S-RAM (IC3004) and TITLE IC (IC3003) on the CAMERA-KEY C.B.A.
17	-	I	Connected with ground.
18	TELE Ⓗ	O	Telephoto drive signal for the PZ motor.
19	WIDE Ⓗ	O	Wide-angle drive signal for the PZ motor.
20	Vss	I	Connected with ground.
21	Vss	I	Connected with ground.
22	FADE Ⓗ	O	Fade control signal output.
23	SAMPLE FADE Ⓗ	O	When the digital title sampling level is variable, the back-ground scene (not imposed) is forcedly faded to the white level for making the sampling level judgment easy.
24	SEE THROUGH Ⓗ	O	This signal goes 'High' when the see-through mode is selected.
25	CAMERA ON Ⓛ	O	Camera power control signal. The camera power control signal turns on when this signal goes 'Low'.
26	CI-REQUEST Ⓛ	O	Serial communication request signal to the TITLE/MUSIC microcomputer (IC3001).
27	CI-CS Ⓗ	O	Chip select signal for serial communication with the TITLE/MUSIC microcomputer (IC3001). Serial communication is allowed while this signal is 'High'.
28	CG-STROBE Ⓗ	O	Instruction signal for reading data into the character IC (IC2941).
29	CG-CS Ⓛ	O	Chip select signal for serial communication with the character IC (IC2941). Serial communication is allowed while this signal is 'Low'.
30	CK-REQUEST Ⓛ	O	Communication request signal output to the main microcomputer (IC503).
31	CK-CS Ⓗ	I	Chip select signal for serial communication with the main microcomputer (IC503). Serial communication is allowed while this signal is 'High'.

Table I-5 (2/2)

<table>
<tr><th>Pin No.</th><th>Signal designation</th><th>I/O</th><th>Function</th></tr>
<tr><td>32</td><td>S-CLOCK</td><td>I/O</td><td>Clock input/output for serial communication with the main microcomputer (IC503), character IC (IC2941), TITLE/MUSIC control microcomputer (IC3001), EDIT microcomputer (IC509), character generator (IC3005), and TITLE IC (IC3003).</td></tr>
<tr><td>33</td><td>S-DATA OUT</td><td>O</td><td>Data output for serial communication with the main microcomputer (IC503), character IC (IC2941), TITLE/MUSIC control microcomputer (IC3001), and EDIT microcomputer (IC509).</td></tr>
<tr><td>34</td><td>S-DATA IN</td><td>I</td><td>Data input for serial communication with the main microcomputer (IC503), character IC (IC2941), TITLE/MUSIC control microcomputer (IC3001), EDIT microcomputer (IC509), character generator (IC3005), and TITLE IC (IC3003).</td></tr>
<tr><td>35</td><td>SHUTTER SPEED 0</td><td rowspan="3">O</td><td rowspan="3">Electronic shutter speed control signal
<table>
<tr><th></th><th>1/60</th><th>1/250</th><th>1/500</th><th>1/1000</th><th>1/2000</th></tr>
<tr><td>SHUTTER SPEED 0</td><td>L</td><td>H</td><td>L</td><td>H</td><td>L</td></tr>
<tr><td>SHUTTER SPEED 1</td><td>L</td><td>L</td><td>H</td><td>H</td><td>L</td></tr>
<tr><td>SHUTTER SPEED 2</td><td>L</td><td>L</td><td>L</td><td>L</td><td>H</td></tr>
</table></td></tr>
<tr><td>36</td><td>SHUTTER SPEED 1</td></tr>
<tr><td>37</td><td>SHUTTER SPEED 2</td></tr>
<tr><td>38</td><td>F AWB Ⓗ/LOCK Ⓛ</td><td>O</td><td>AWB circuit control/communication output.
This signal goes 'High' in the FAWB state, and it goes 'Low' in the locked state.</td></tr>
<tr><td>39</td><td>X OUT</td><td>O</td><td rowspan="2">Connected with 4 MHz ceramic oscillator.</td></tr>
<tr><td>40</td><td>X IN</td><td>I</td></tr>
<tr><td>41</td><td>-</td><td>I</td><td>Connected with ground.</td></tr>
<tr><td>42</td><td>VDD</td><td>I</td><td>Connected with SS 5V.</td></tr>
</table>

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Note: Except the disassembling procedure of cover section, all procedures for disassembling are the same as the model E850HiE, F. Also, the repairing tools, adhesives (supplies) and extension cables can be used for the E850HiE, F.

1. Disassembling

1-1 Removal/assembling of covers

1-1-1 Removal of finder assembly, EVF ring, microphone and AV cap

(1) Detach the finder assembly, EVF ring, microphone hood and AV cap.

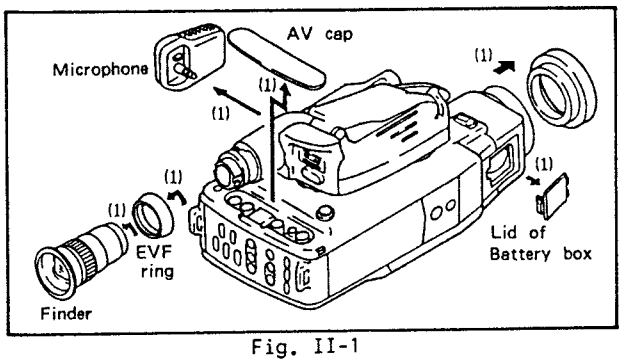

Fig. II-1

1-1-2 Removal of cassette cover

(1) To remove two screws (a), peel off two cassette cover seals.
(2) Detach the cassette cover.

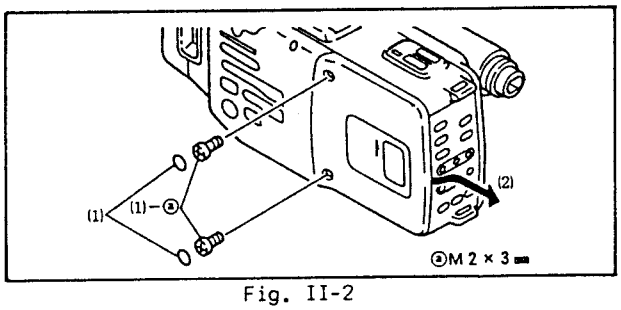

Fig. II-2

1-1-3 Removal of left grip cover

(1) Remove two screws (a) of the front side.
(2) To remove two screws (a) of the grip rear side, turn the grip downward by 90°.
(3) Detach the left grip cover.

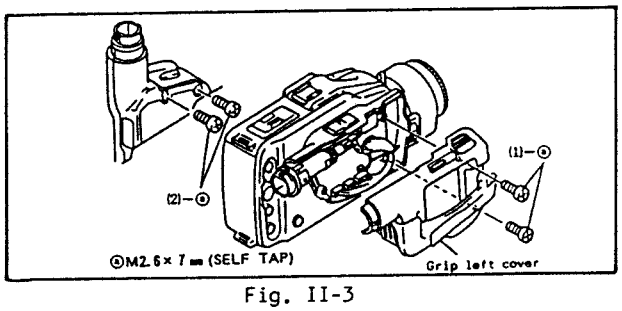

Fig. II-3

1-1-4 Removal of lens cover

(1) Remove three screws (a).
(2) Detach a part (A) while pushing it downward.

* Note: Do not break parts (A) and (B) when removing.

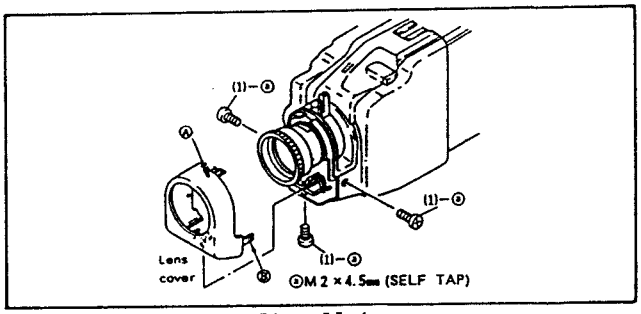

Fig. II-4

1-1-5 Removal of left cover

(1) Remove two screws (a).
(2) Tilting the grip slantwise, remove two screws (a).
(3) Remove two screws (b), two screws (a) and two screws (c).
(4) Unplug five connectors between the GRIP C.B.A. and the main unit.
(5) While pulling out the connectors from the hole of the grip, remove the left cover.

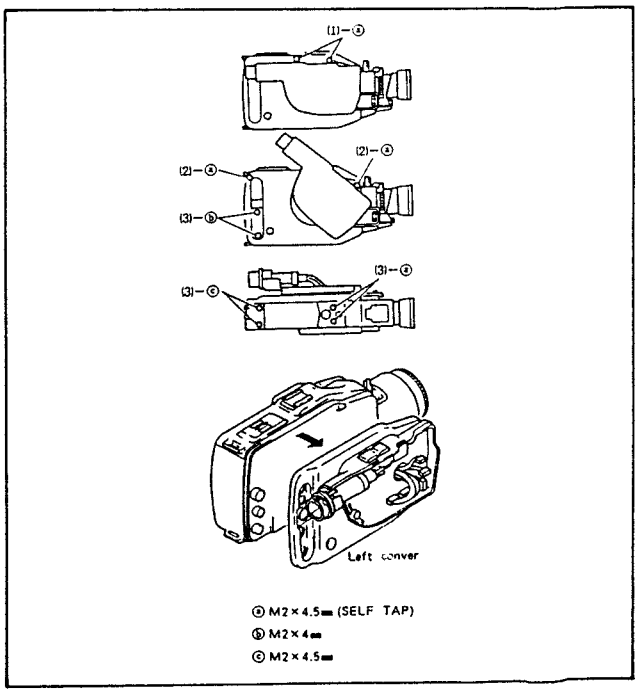

Fig. II-5

1-1-6 Removal of upper right covers and AF C.B.A.

(1) Remove a screw ⓐ.
(2) Remove a screw ⓑ.
(3) Remove the right cover.
(4) Unplug the CN2810 between the AF C.B.A.
(5) Remove the upper cover.

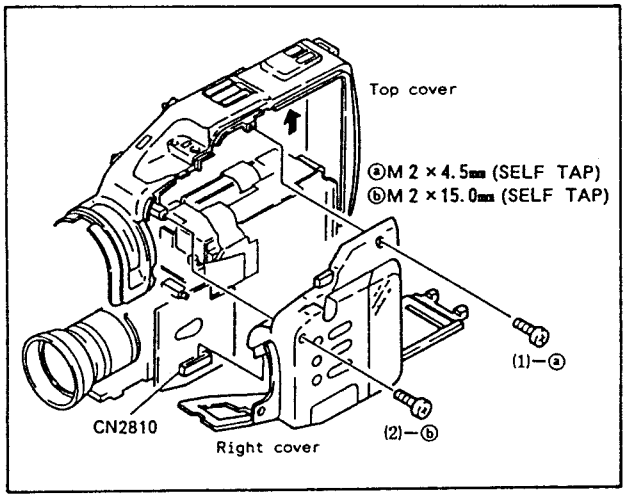

Fig. II-6

(6) Remove five screws ⓒ.
(7) Remove the CAMERA-KEY C.B.A.

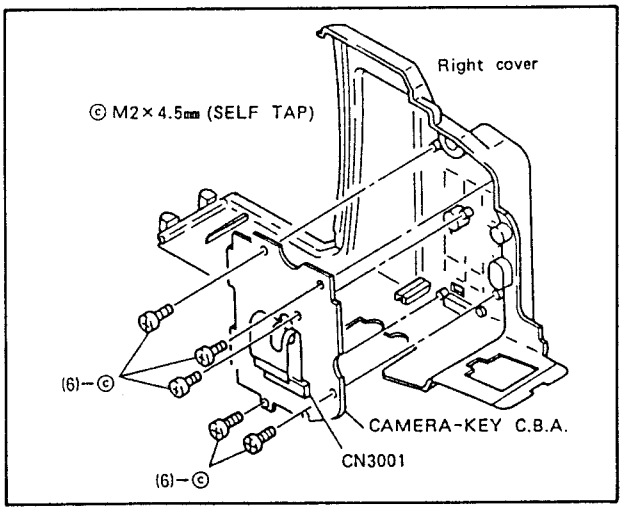

Fig. II-7

1-1-7 Separation of camera and recorder units

(1) Remove the REMOCON C.B.A.
(2) Remove the MIC C.B.A.
(3) Remove the solder on the head amplifier.
(4) Remove the screws ⓐ and ⓑ.
(5) Unplug CN504, 506, 2204 and 2811 between the camera and recorder units.
(6) Separate the camera and recorder units.

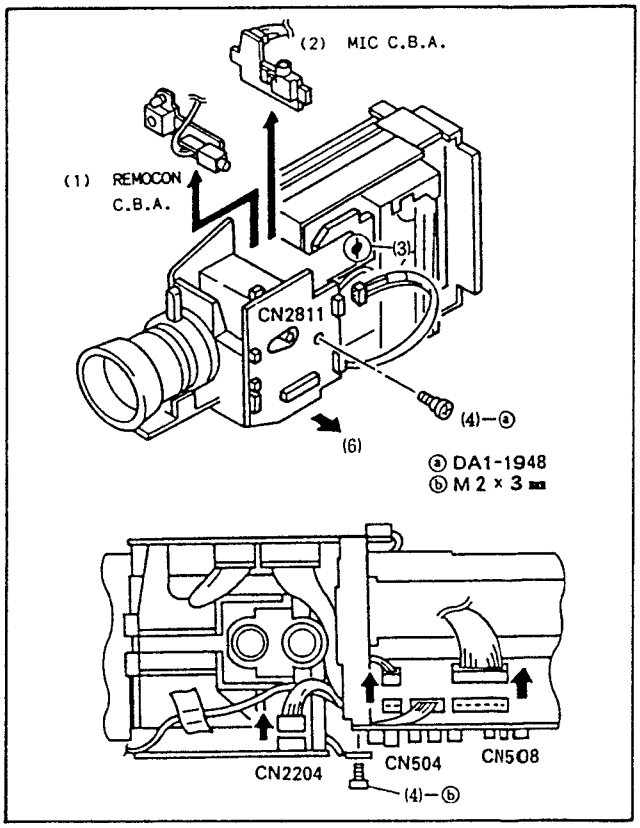

Fig. II-8

1-1-8 Removal of GRIP C.B.A.

(1) Remove two screws ⓐ.
(2) Remove the GRIP C.B.A.

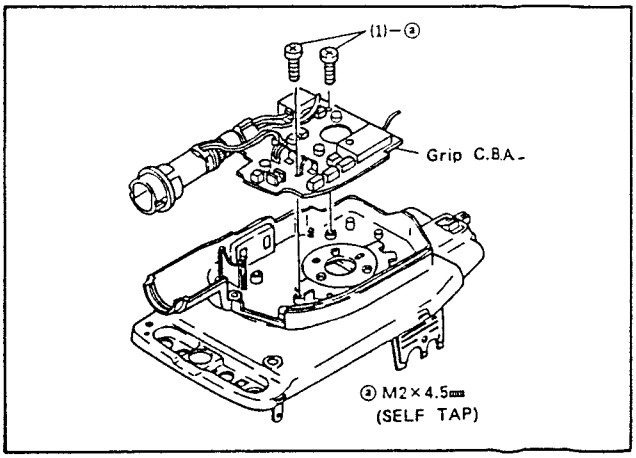

Fig. II-9

1-1-9 Removal of grip right cover

(1) Remove three screws ⓐ.
(2) Remove the grip right cover.

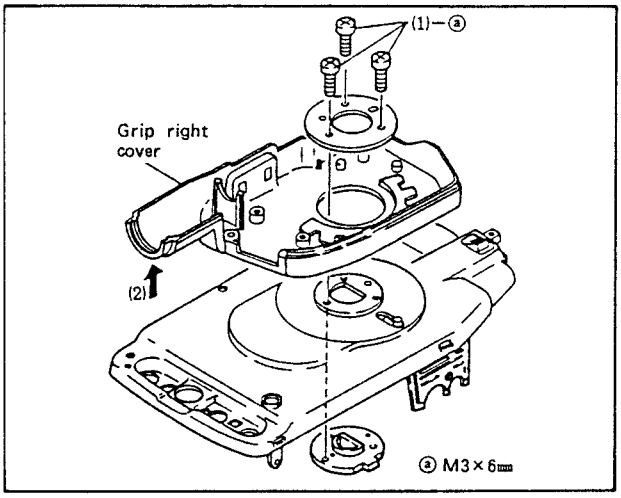

Fig. II-10

1-1-10 Removal of rear cover

(1) Remove two screws ⓐ.
(2) Remove the rear cover.

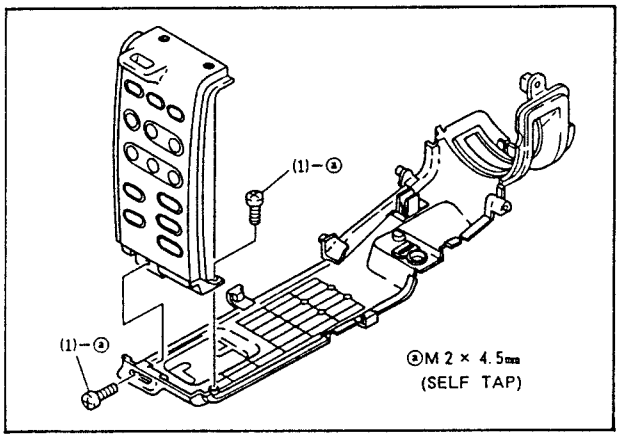

Fig. II-11

1-2 Oil/grease/bond application positions

After cleaning, replacement, etc., apply the following supplies to the positions indicated in the Fig. II-12.

① Grease GE-X8 (CY9-8044-000)
② Grease GE-C4 (CY9-8045-000)
③ Instantaneous adhesive Alonapha (CY9-8007-000)
④ Floil G902 (DY9-3017-000)
⑤ Grease GE-C4 (CY9-8045-000), Teflon Fluorocarbon Resin MP-102 (DY2-3013-000)

Mix ratio GE-C4 : MP102
10 : 3

Note: If the unit is used for a long period of time, the grease applied on the gear of convex helicoid may run out to position Ⓐs.
If you find this, remove it by using the thin brush or equivalent and add the grease GE-C4 and the MP102 (⑤). At this time, be sure to add the proper amount. (If you add it excessively, it may run out to the front face of fixed lens barrel.)

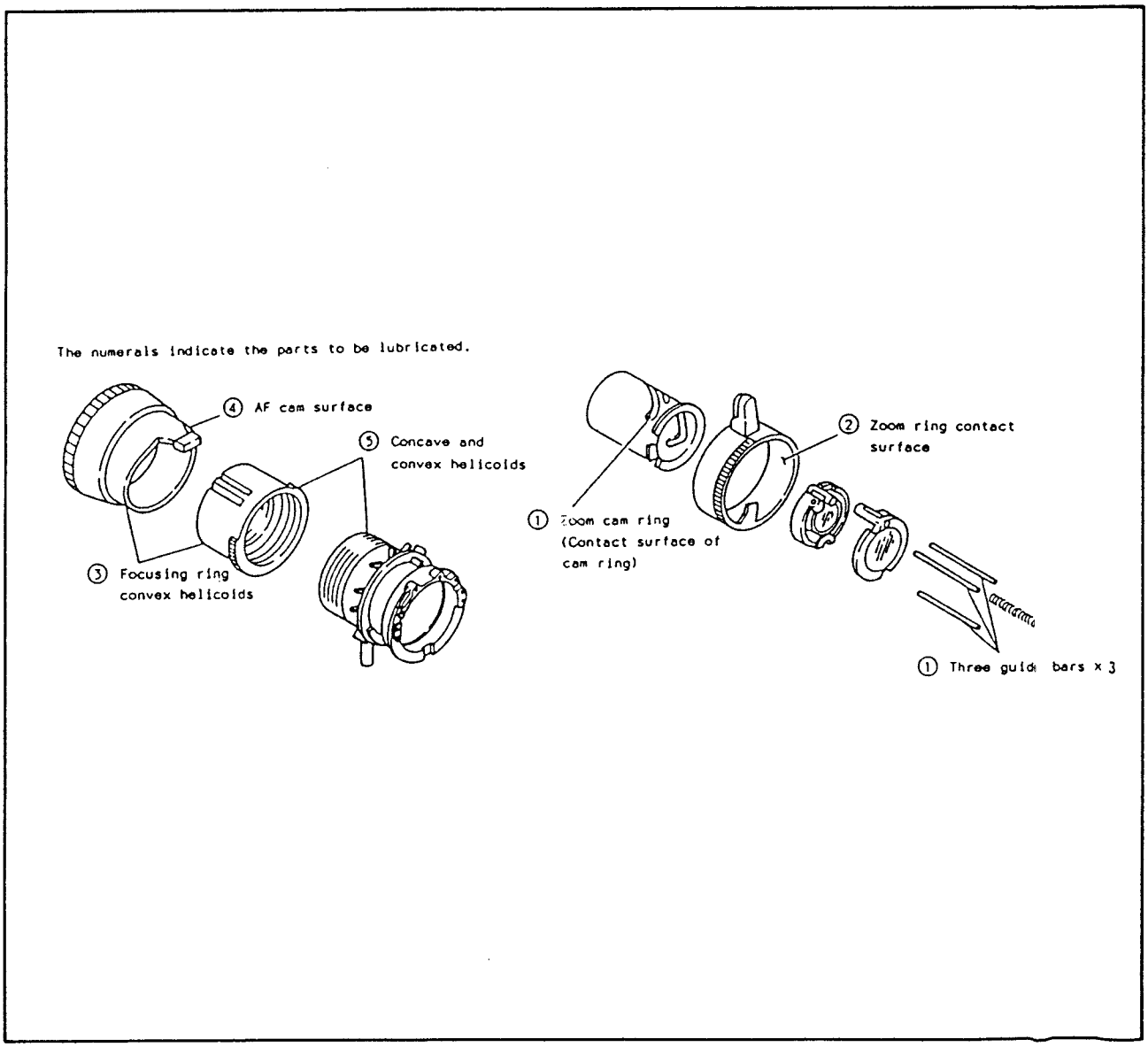
The numerals indicate the parts to be lubricated.
④ AF cam surface
⑤ Concave and convex helicoids
③ Focusing ring convex helicoids
② Zoom ring contact surface
① Zoom cam ring (Contact surface of cam ring)
① Three guide bars x 3

Fig. II-12

Note: As the CARD C.B.A. for the chip system is newly added, preparation procedures of camera section adjustment is revised from the H800A's. (Others are the same as the H800A's.)

2. Camera Section Adjustments

2-1 Preparation/setting for camera section adjustments

(1) Preparation

- Y/C Mix Amplifier II (DY9-1079-001)*
- Extension Cable Kit (DY9-1107-100)
- Constant Voltage Supplier (6 V)
- Camera Mi-com. Adjuster (DY9-1095-000)

* The old type (DY9-1079-000) can be used after the modification.
For details, refer to P. II-3 of Service Manual for the H660A.

(2) Setting for camera electrical adjustments

Procedures:

1) Short-circuit the following test points on the AUTO FOCUS C.B.A.

CN2806 ② (CAMERA 5V) ⟷ CN2808 ③ (SS 5V)
TP2104 (CAM. ON Ⓛ) ⟷ TP2101 (Ground)

2) Connect the extension cable L.

3) Connect the Y/C Mix Amplifier II with the extension cables H and K.

4) Set the switch of Y/C Mix Amplifier II to the side of "Yx1 IN".

5) To adjust the character position or the PLL adjustment connect the CARD C.B.A.

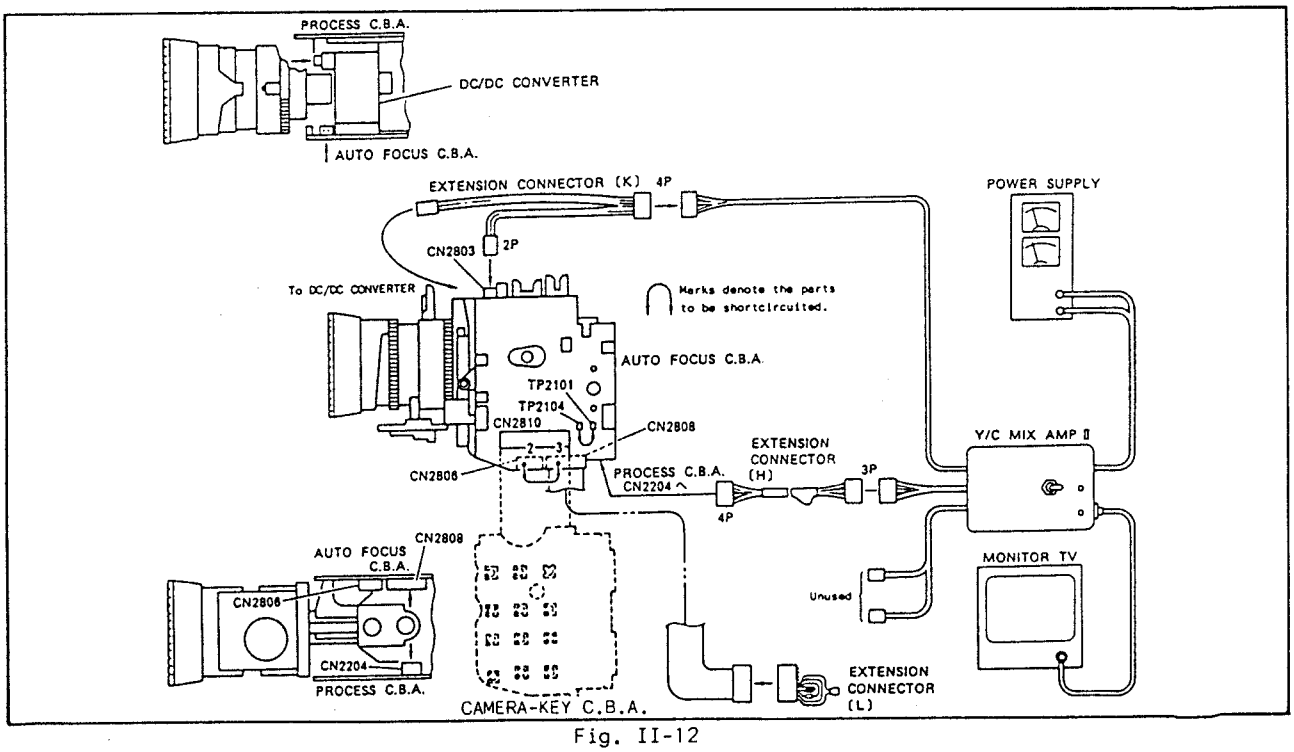

Fig. II-12

Note: As the CAMERA-KEY C.B.A. for the chip system is newly added, the following two adjustments must be performed in addition to the adjustments for the E800Hi's. (The PLL adjustment is revised from the E800Hi's.)

2-2 Electrical adjustments of camera section

* Confirm that the specifications are obtained even after taking an adjuster off from the VCs.

2-2-1 PLL adjustment (revised)

M, EQ.	Digital voltmeter
TP/TRIG	CAMERA-KEY C.B.A. TP Between R3044 and R3045 (PLL)
ADJ.	CAMERA-KEY C.B.A. VC3001* (PLL)
SPEC.	2.5 +0.1 V

2-2-2 Character (DATE) positioning adjustment

Before adjustment, assemble the camera and recorder unit together, and make DATE indication display.

SIGNAL	Color bar chart
M. EQ.	Monitor TV
ADJ.	CAMERA-KEY C.B.A. VC3002* (CG-SIZE)
SPEC.	The middle point between lower 2 and 3 digits of date indication must be positioned on the border line between violet and red bars. (At this time, be sure to check that the date indication on EVF screen is displayed clearly.)

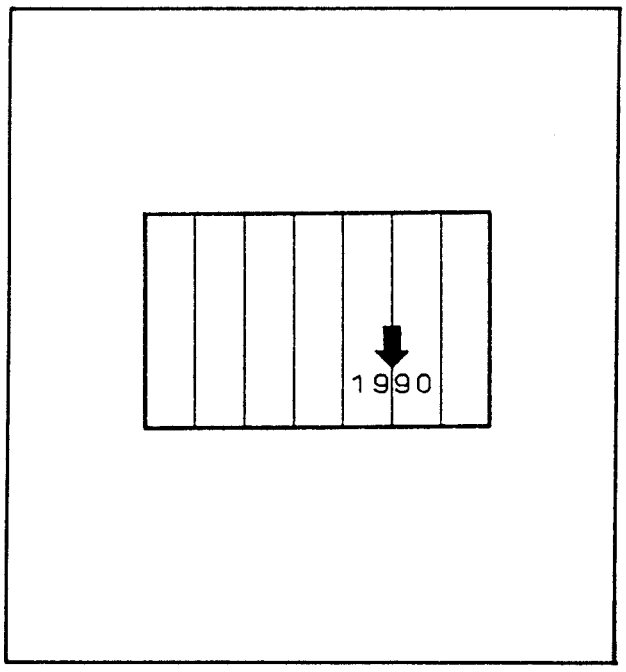

Fig. II-13

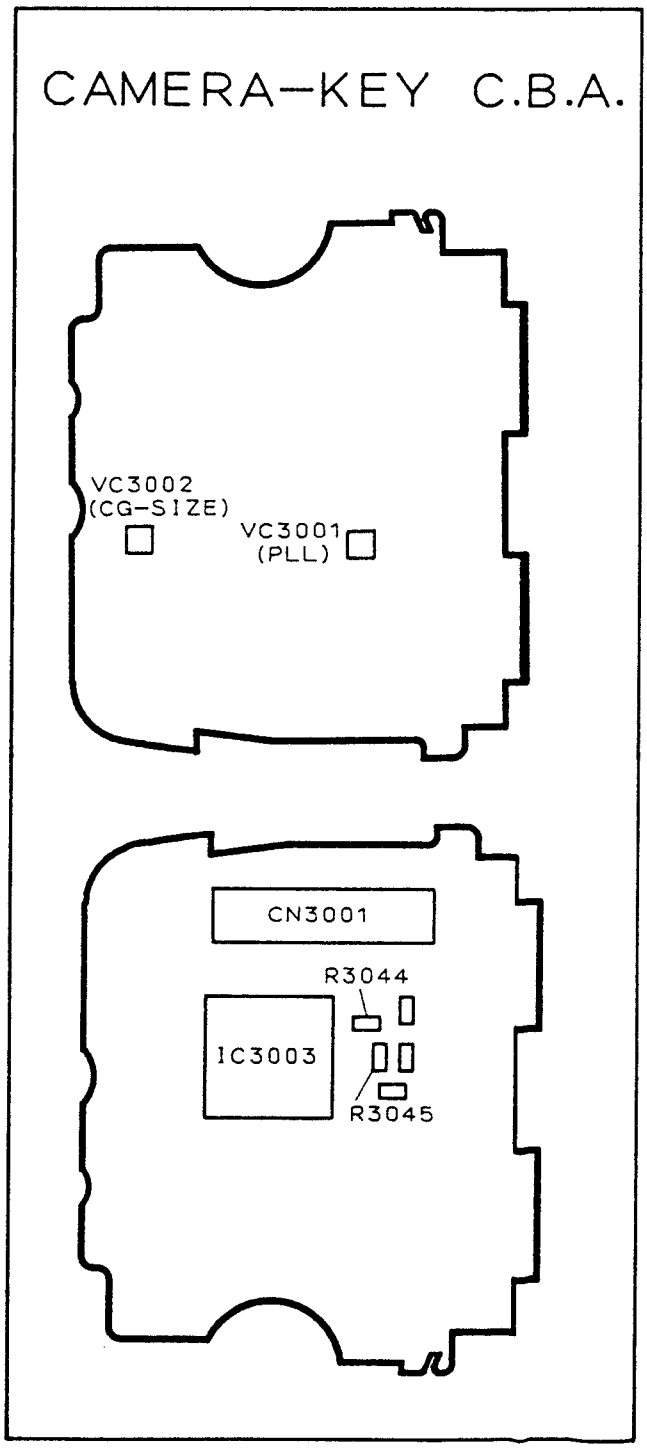

Fig. II-14

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- Lens / Camera Unit Section ..... Ⅲ－3
- Recorder Unit Section ..... Ⅲ－5
- Mechanical Chassis Section 1 ..... Ⅲ－7
- Mechanical Chassis Section 2 ..... Ⅲ－9
- Mechanical Chassis Section 3 ..... Ⅲ－11
- Accessory Parts Section ..... Ⅲ－13

ELECTRICAL PARTS LIST ..... Ⅲ－15

PARTS LIST ..... Ⅲ－23

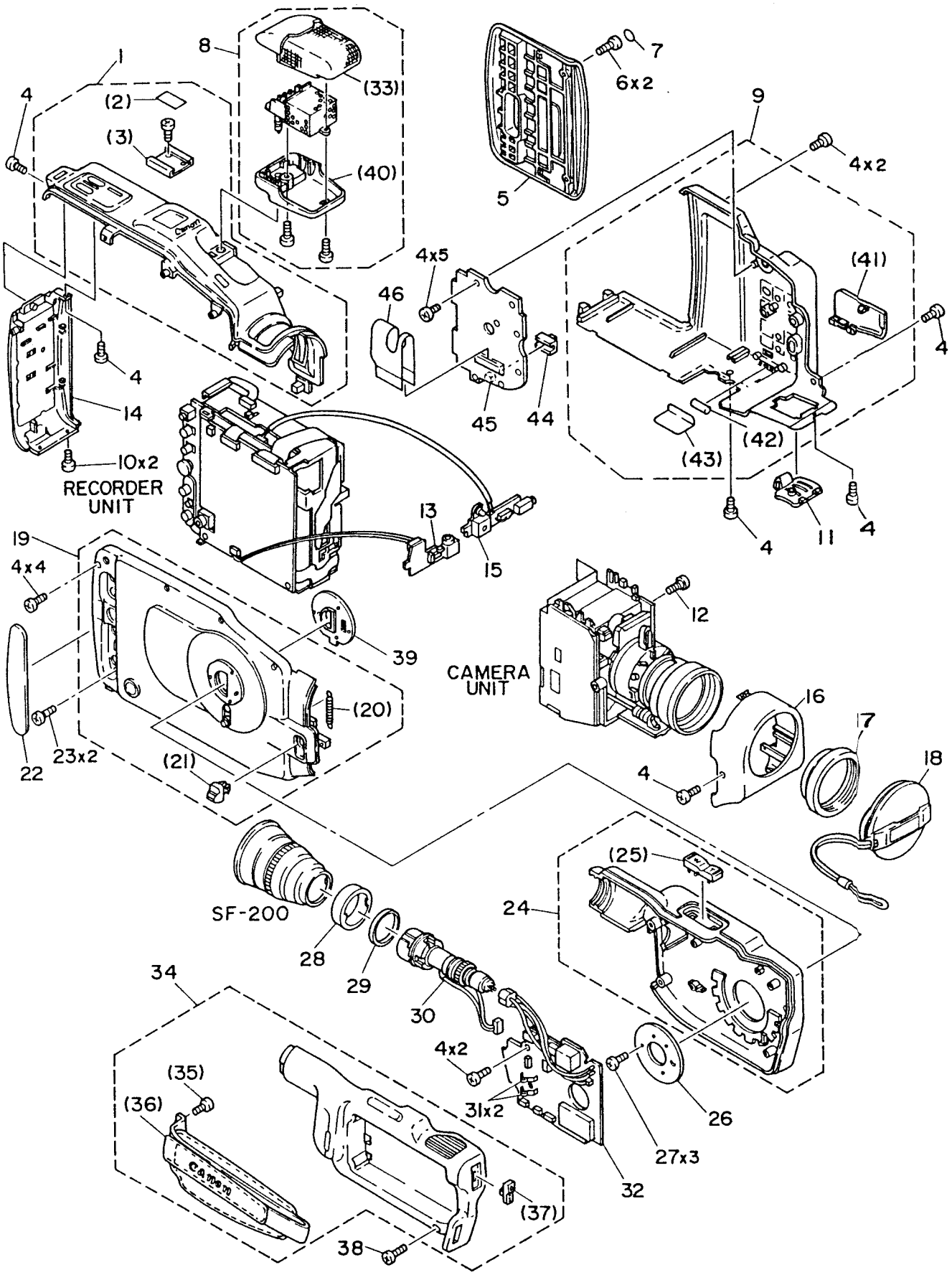
CAUTION

1. ESPECIALLY CRITICAL PARTS IN THE POWER CIRCUIT BLOCK SHOULD NOT BE REPLACED WITH OTHER MARKS.
   CRITICAL PARTS ARE MARKED WITH ⚠ IN THIS ELECTRICAL PARTS LIST.

2. THE NUMBERS INDICATED ON THE CONNECTORS DO NOT CORRESPOND TO THE SYMBOL NUMBERS.
   PLEASE CHECK THE CORRECT SYMBOL NUMBERS OF THE CONNECTORS ON THE INTERCONNECTION SCHEMATIC DIAGRAM.

3. THE PARTS SHADOWED ( ) DENOTE THE F-PAL USE.
   (THE UNSHADOWED ARE FOR THE PAL SYSTEM.)

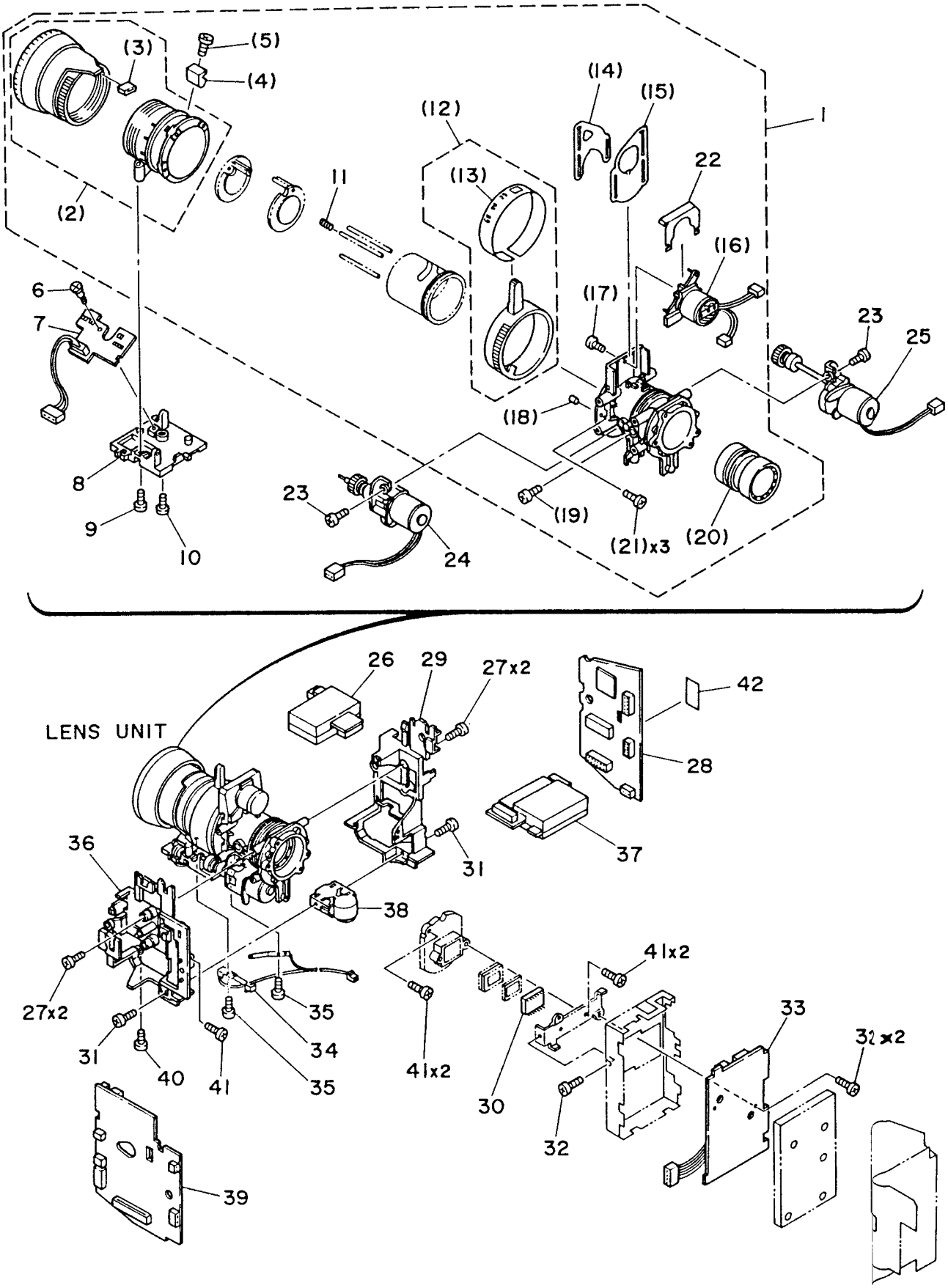
Casing Parts Section



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DY2-1276-000 000	B	1	TOP COVER ASS'Y	E850HiE ONLY
	DY2-1277-000 000	B	1	TOP COVER ASS'Y	E850HiF ONLY
2	DA1-2489-000 000	B	1	SHEET, ACCESSORY SHOE	
3	DA1-2486-000 000	B	1	SHOE, ACCESSORY	
4	XA4-7200-459 000	F	20	SCREW, CROSS-RECESS, PH	
5	DF1-1128-000 000	B	1	COVER, CASSETTE	
6	XA1-7200-307 000	F	2	SCREW, CROSS-RECESS, PH	
7	DA1-4405-000 000	B	2	SEAL	
8	DH9-0500-000 000	B	1	MICROPHONE ASS'Y	
9	DY2-1371-000 000	B	1	RIGHT COVER ASS'Y	E850HiE ONLY
	DY2-1372-000 000	B	1	RIGHT COVER ASS'Y	E850HiF ONLY
10	XA9-0449-000 000	F	2	SCREW, CROSS-RECESS	
11	DA1-4464-000 000	B	1	COVER, BATTERY	
12	DA1-1948-000 000	F	1	SCREW, CROSS-RECESS	
13	DG1-1230-000 000	C	1	MIC. JACK C.B.A.	
14	DY2-1278-000 000	B	1	COVER, REAR	E850HiE ONLY
	DY2-1279-000 000	B	1	COVER, REAR	E850HiF ONLY
15	DG1-1236-000 000	C	1	REMOCON C.B.A.	
16	DA1-4460-000 000	B	1	COVER LENS	
17	DA1-2476-000 000	B	1	HOOD	
18	DF1-0512-000 000	B	1	CAP, LENS	
19	DY2-1332-000 000	B	1	LEFT COVER ASS'Y	
20	DS1-5186-000 000	C	1	SPRING	
21	DA1-4466-000 000	B	1	KNOB, GRIP	
22	DA1-4465-000 000	B	1	CAP, AV	
23	XA1-6200-409 000	F	2	SCREW, CROSS-RECESS, PH	
24	DY2-1297-000 000	B	1	RIGHT COVER, GRIP	
25	DA1-2460-000 000	B	1	KNOB, T/W	
26	DA1-2461-000 000	C	1	PLATE	
27	XA9-0503-000 000	F	3	SCREW, CROSS-RECESS, PH	
28	DA1-4429-000 000	B	1	RING, E.V.F.	
29	DA1-1864-000 000	B	1	RING, RUBBER	
30	DY2-1159-000 000	D	1	CRT ASS'Y	
31	DA1-2463-000 000	C	2	TERMINAL, BATTERY	
32	DG1-1260-000 000	C	1	GRIP C.B.A.	
33	DY3-4203-000 000	B	1	TOP COVER, MIC	
34	DG1-1859-000 000	B	1	LEFT COVER, GRIP	
35	XA9-0435-000 000	F	2	SCREW, CROSS-RECESS, PH	
36	DA1-2948-000 000	B	1	STRAP, HAND	
37	DA1-4428-000 000	B	1	KNOB, BATTERY EJECT	
38	XA4-9260-709 000	F	4	SCREW, CROSS-RECESS, PH	
39	DA1-3659-000 000	C	1	PLATE	
40	DY3-4204-000 000	B	1	BOTTOM COVER, MIC	
41	DA1-4748-000 000	B	1	COVER, SWITCH	E850HiE ONLY
	DA1-4747-000 000	B	1	COVER, SWITCH	E850HiF ONLY
42	DA1-4477-000 000	B	1	SHAFT	
43	DA1-4444-000 000	B	1	PLATE, IN SULATION	
44	DA1-4456-000 000	B	1	SWITCH	
45	DG1-1853-000 000	C	1	CAMERA KEY C.B.A.	
46	DH2-1402-000 000	C	1	PRINTED CORD	

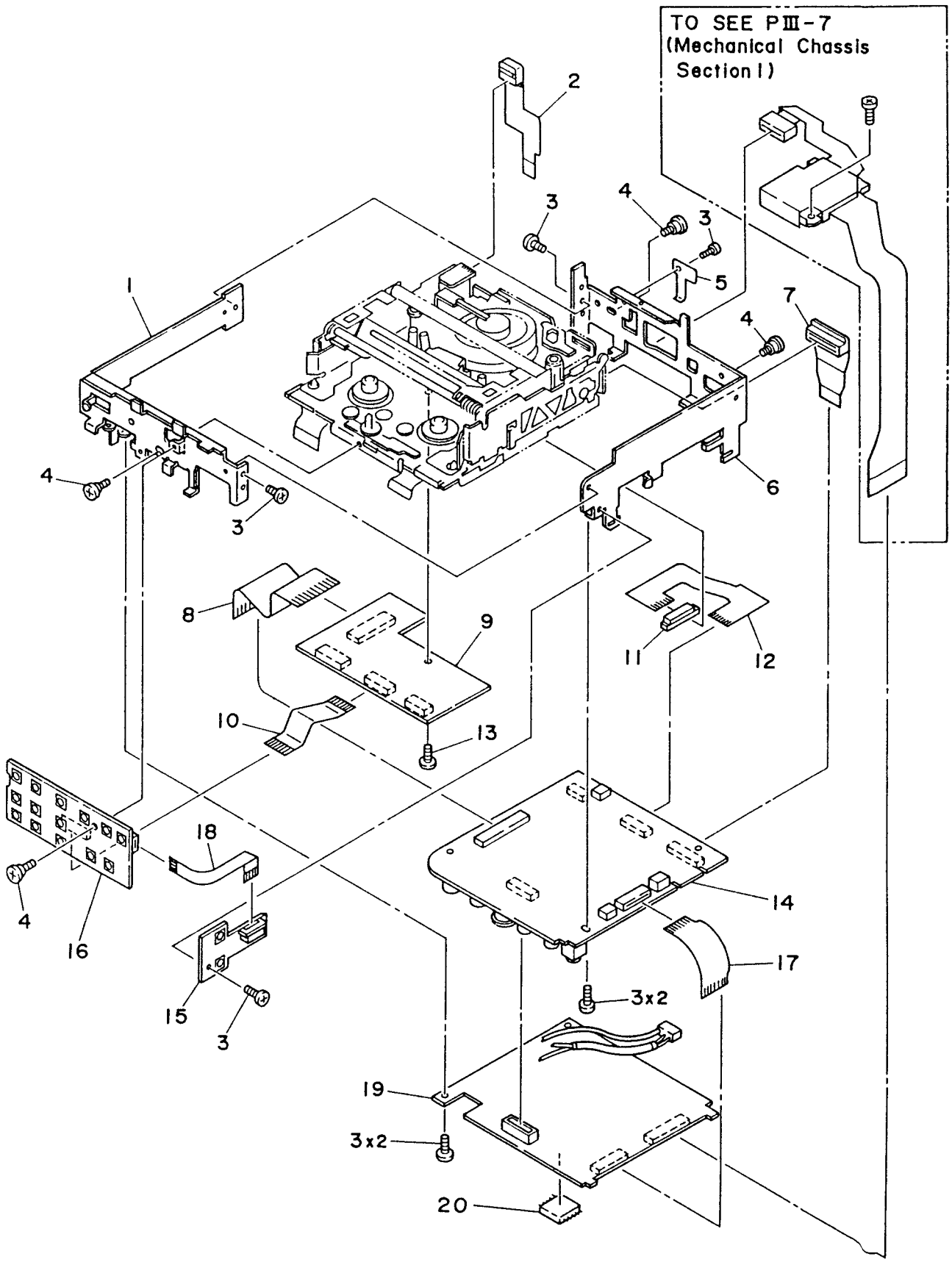
Lens/Camera Unit Section



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DY1-7128-000 000	C	1	ZOOM LENS ASS'Y	
2	DY1-7129-000 000	C	1	FOCUS LENS ASS'Y	
3	DA7-1734-000 000	C	1	STOPPER, RUBBER	
4	DA7-1724-000 000	C	1	STOPPER, NEARDISTANCE	
5	XA4-4200-507 000	F	1	SCREW, CROSS-RECESS, PH	
6	X96-1723-500 000	F	1	SCREW	
7	YG9-5021-000 000	C	1	PHOTO REFRECTOR C.B.A.	
8	YA1-0061-000 000	C	1	HOLDER, LITHIUM BATTERY	
9	XA4-2170-707 000	F	1	SCREW, CROSS-RECESS	
10	XA4-4170-407 000	F	1	SCREW, CROSS-RECESS, PH	
11	DS1-5198-000 000	C	1	SPRING, COIL	
12	DY1-7130-000 000	C	1	ZOOM RING ASS'Y	
13	YA1-0064-000 000	B	1	SHEET, ZOOM	
14	DA7-1792-000 000	C	1	BLIND, IG METER (B)	
15	YF1-0004-000 000	C	1	BLIND, IG METER (A)	
16	YH8-0002-000 000	C	1	IG METER	
17	XA4-4170-457 000	F	1	SCREW, CROSS-RECESS, PH	
18	DA7-1458-000 000	C	1	DUMPER, RUBBER	
19	XB4-6260-607 000	F	1	SCREW M2.6X6	
20	DG9-3384-000 000	C	1	RELAY LENS ASS'Y	
21	XA4-9170-557 000	F	3	SCREW, CROSS-RECESS, PH	
22	DA7-1739-000 000	C	1	COVER, IG METER	
23	X96-1723-610 000	F	2	SCREW, SLOTTED, SHOULDER	
24	YG9-5023-000 000	C	1	PZ MOTOR ASS'Y	
25	YG9-5022-000 000	C	1	AF MOTOR ASS'Y	
26	DH3-0021-000 000	C	1	DC/DC CONVERTER	
27	XA4-7200-609 000	F	4	SCREW, CROSS-RECESS	
28	DG1-1250-000 000	C	1	PROCESS C.B.A.	
29	DA1-3602-000 000	C	1	HOLDER, CAMERA (2)	
30	DH4-0242-000 000	B	1	CCD MN3761FSZ	
31	XA4-7200-459 000	F	2	SCREW, CROSS-RECESS, PH	
32	XA1-7200-307 000	F	3	SCREW, CROSS-RECESS, PH	
33	DG1-1249-000 000	C	1	SENSOR C.B.A.	
34	DF1-0754-000 000	C	1	LITHIUM ASS'Y	
35	XA4-7200-359 000	F	2	SCREW, CROSS-RECESS, PH	
36	DA1-3601-000 000	C	1	HOLDER, CAMERA (1)	
37	DG1-1578-000 000	C	1	DIGITAL MEMORY C.B.A.	
38	DA1-3610-000 000	F	1	PLATE, TRIPOD	
39	DG1-1854-000 000	C	1	AUTO FOCUS C.B.A.	E850HiE ONLY
	DG1-1855-000 000	C	1	AUTO FOCUS C.B.A.	E850HiF ONLY
40	XA4-9170-609 000	F	1	SCREW, CROSS-RECESS, PH	
41	XA4-9200-709 000	F	5	SCREW, CROSS-RECESS, PH	
42	DA1-3690-000 000	C	1	SHEET, PROTECT	

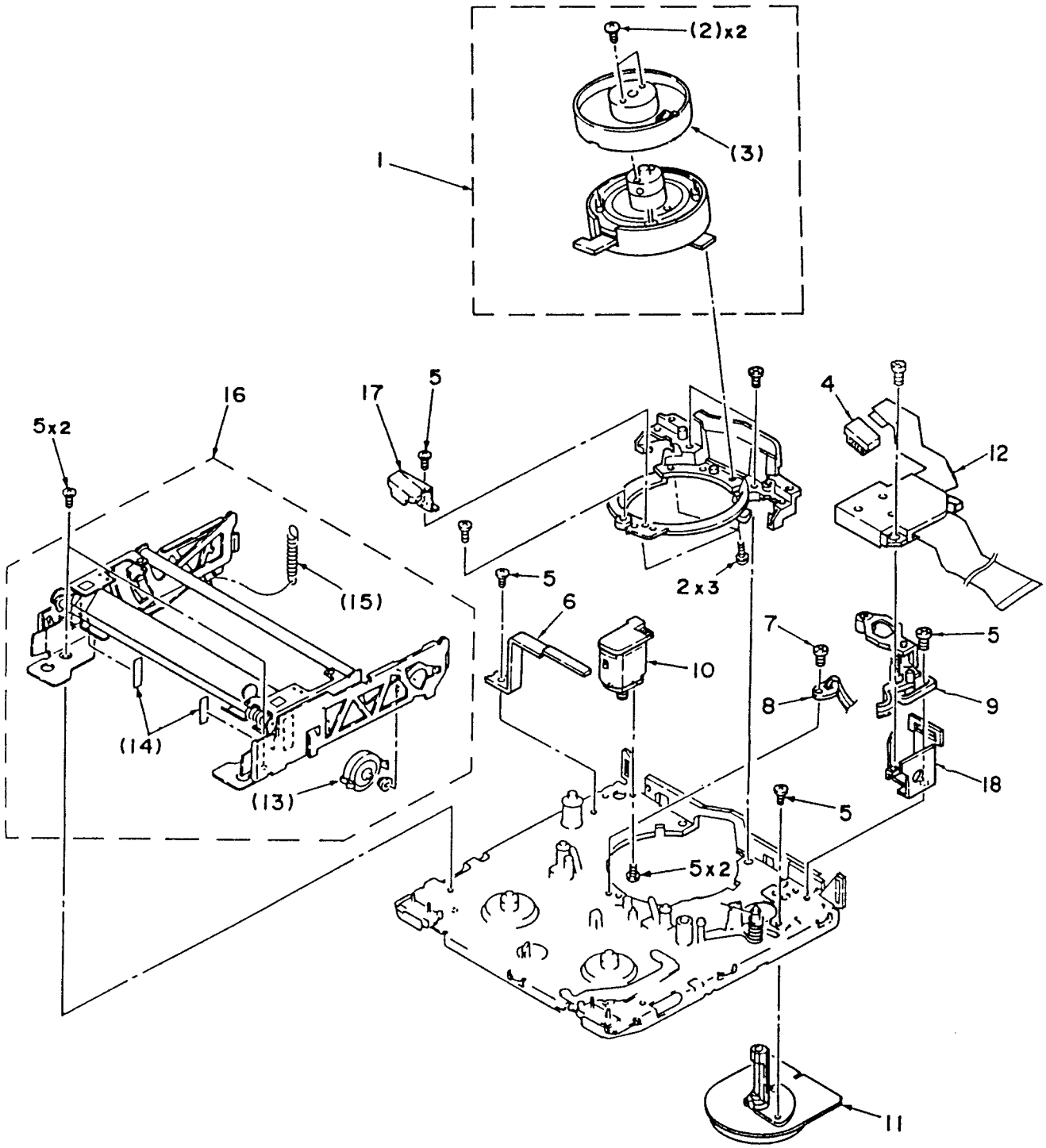
Recorder Unit Section



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DF1-0759-000 000	C	1	HOLDER (1), RECORDER	
2	DF1-0757-000 000	C	1	PRINTED CORD ASS'Y	
3	XA1-7200-307 000	F	9	SCREW, CROSS-RECESS, PH	
4	DA1-1900-000 000	F	4	SCREW, CROSS-RECESS	
5	DA1-2349-000 000	C	1	PLATE, GROUND	
6	DA1-4455-000 000	C	1	HOLDER (2), RECORDER	
7	DF1-0756-000 000	C	1	PRINTED CORD ASS'Y	
8	DH2-1242-000 000	C	1	PRINTED CORD	
9	DG1-1252-000 000	C	1	CJ C.B.A.	
10	DH2-1241-000 000	C	1	PRINTED CORD	
11	DH2-1250-000 000	C	1	CONNECTOR 11P	
12	DH2-1229-000 000	C	1	PRINTED CORD	
13	XA4-7200-459 000	F	1	SCREW, CROSS-RECESS, PH	
14	DG1-1257-000 000	C	1	SYSCON SERVO C.B.A.	
15	DG1-1248-000 000	C	1	POWER EJECT C.B.A.	
16	DG1-1228-000 000	C	1	RECORDER KEY C.B.A.	
17	DH2-1230-000 000	C	1	PRINTED CORD	
18	DH2-1244-000 000	C	1	PRINTED CORD	
19	DG1-1856-000 000	C	1	AUDIO VIDEO C.B.A.	
20	DH4-0301-000 000	C	1	JOG C.B.A.	

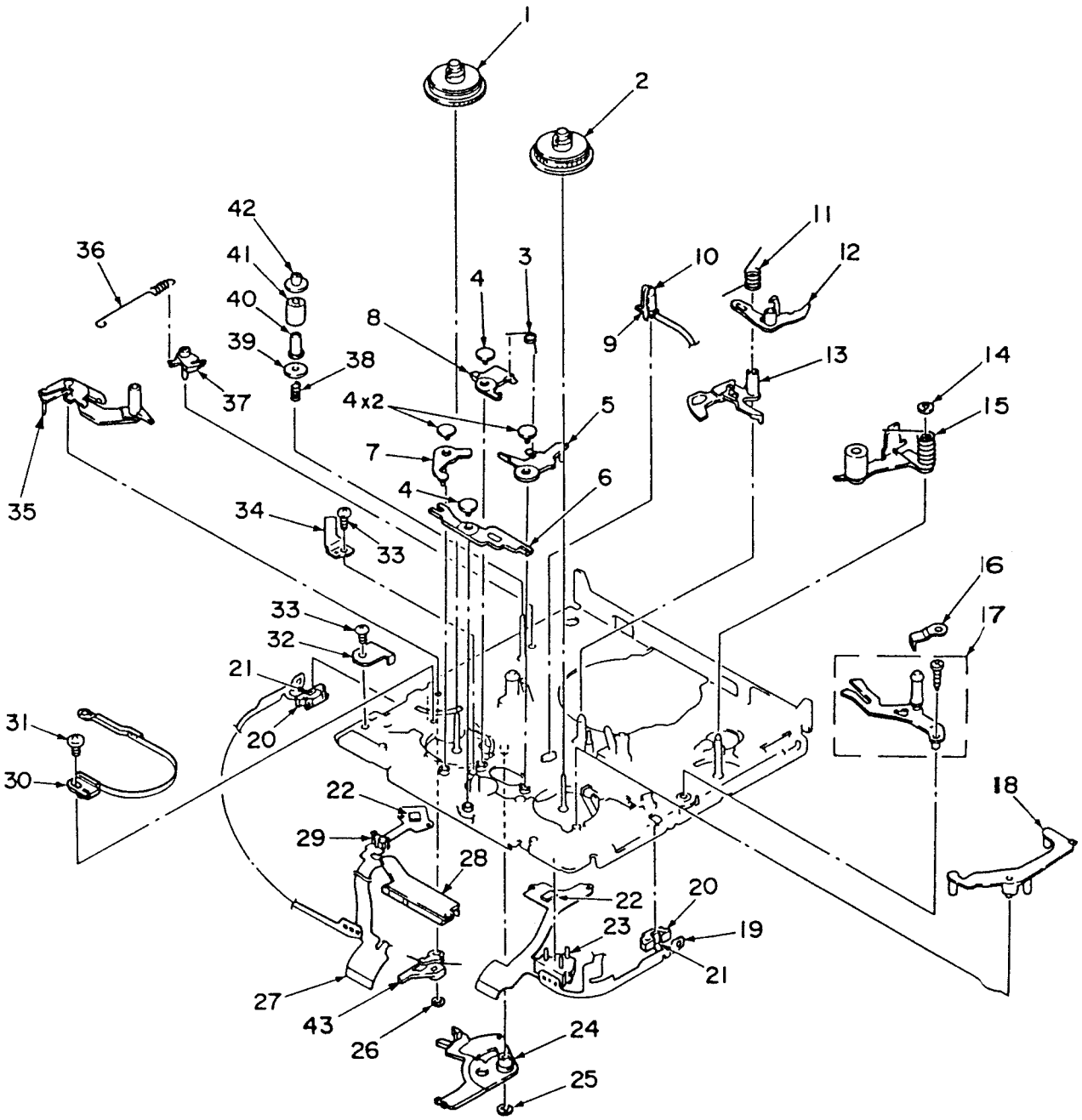
Mechanical Chassis Section I



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DY4-2930-000 000	E	1	DRUM ASS'Y	
2	DY4-2730-000 000	F	5	SCREW, CROSS-RECESS	
3	DY4-2931-000 000	E	1	UPPER DRUM ASS'Y	
4	DY4-2920-000 000	C	1	CONNECTOR 13P	
5	DY4-2727-000 000	F	8	SCREW, CROSS-RECESS	
6	DY4-2675-000 000	C	1	TERMINAL, EARTH	
7	DY4-2728-000 000	F	1	SCREW, CROSS-RECESS	
8	Y22-8120-000 000	B	1	SENSOR, DEW	
9	DY4-2910-000 000	C	1	ROLLER ASS'Y	
10	DY4-2911-000 000	C	1	LODING MOTOR ASS'Y	
11	DY4-2726-000 000	C	1	CAPSTAN MOTOR	
12	DY4-2932-000 000	C	1	HEAD AMP ASS'Y	
13	DY4-2720-000 000	C	1	DAMPER, OIL	
14	DY4-2729-000 000	C	2	TAPE	
15	DY4-2708-000 000	C	1	SPRING, COIL	
16	DY4-2673-000 000	C	1	CASSETTE, COMPARTMENT ASS'Y	
17	DY4-2721-000 000	C	1	GUARD, GUIDE	
18	DY4-2925-000 000	C	1	HOLDER	

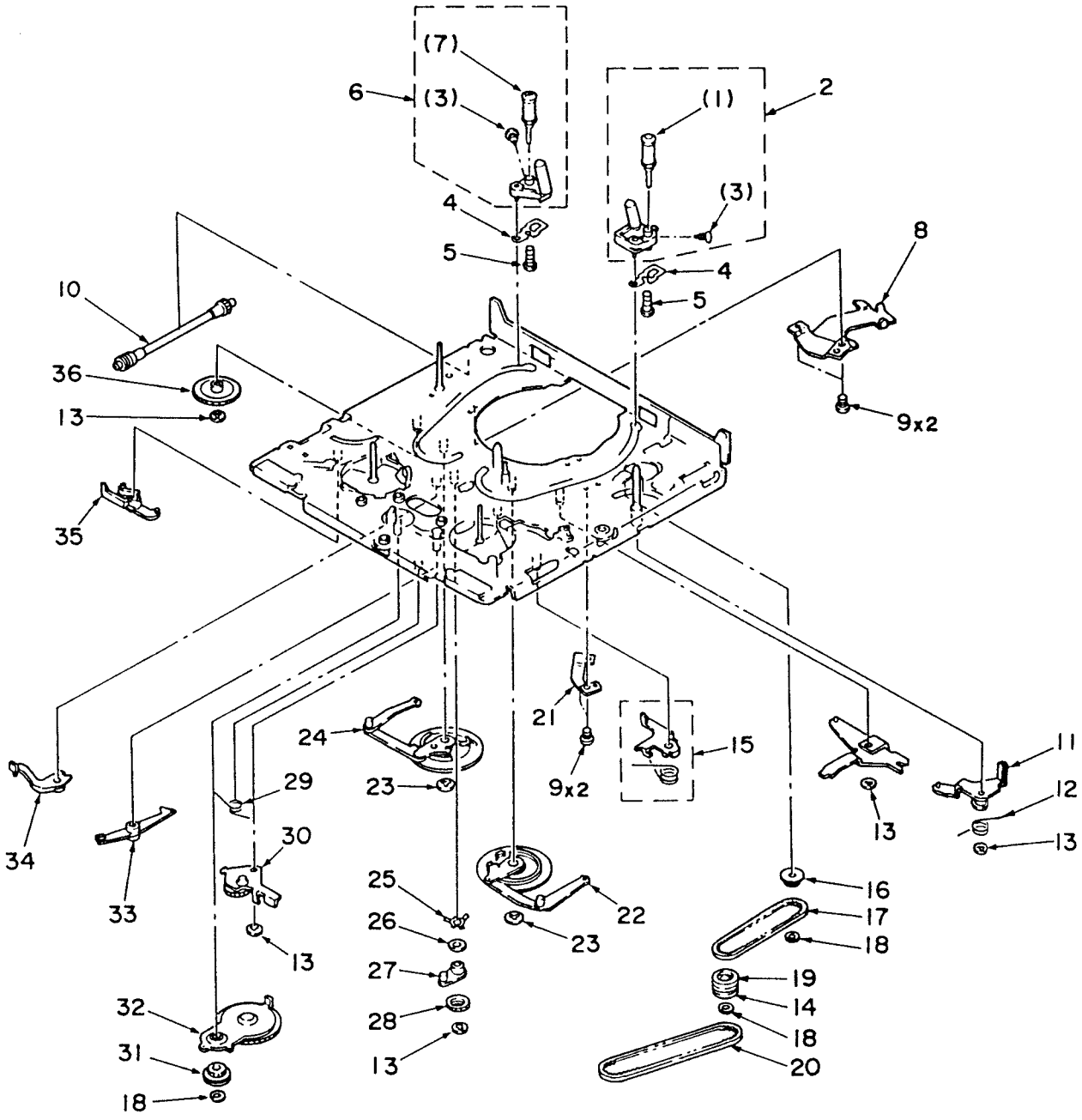
Mechanical Chassis Section 2



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DY4-2663-000 000	C	1	REEL, SUPPLY	
2	DY4-2666-000 000	C	1	REEL, TAKE UP	
3	DY4-2699-000 000	C	1	SPRING, COIL	
4	DY4-2696-000 000	C	4	PIN, SHAFT	
5	DY4-2714-000 000	C	1	BRAKE, T	
6	DY4-2692-000 000	C	1	LEVER, LB	
7	DY4-2691-000 000	C	1	BRAKE, LB	
8	DY4-2713-000 000	C	1	BRAKE, S	
9	DY4-2710-000 000	C	1	HOLDER, LED	
10	Y22-8012-000 000	B	1	LED GL452S	
11	DY4-2697-000 000	C	1	SPRING, COIL	
12	DY4-2716-000 000	C	1	ARM, STOPPER	
13	DY4-2723-000 000	C	1	STOPPER, RK	
14	DY4-2440-000 000	F	1	WASHER	
15	DY4-2912-000 000	C	1	ARM, PINCH	
16	DY4-2707-000 000	C	1	SPRING, PLATE	
17	DY4-2664-000 000	C	1	ARM, TG7	
18	DY4-2712-000 000	C	1	ARM, RELEASE	
19	DY4-2680-000 000	C	1	FLEXIBLE P.C.B. (2)	
20	DY4-2722-000 000	C	2	HOLDER, SENSOR	
21	Y22-8123-000 000	B	2	PHOTO TRANSISTOR EE-P109	
22	Y22-8121-000 000	B	2	PHOTO IC SPI-315-25-CD	
23	DY4-2678-000 000	C	1	SWITCH, PUSH	
24	DY4-2917-000 000	C	1	LEVER, SWITCH	
25	DY4-2688-000 000	F	1	WASHER	
26	DY4-2681-000 000	F	1	WASHER	
27	DY4-2679-000 000	C	1	FLEXIBLE P.C.B. (1)	
28	DY4-2921-000 000	C	1	SWITCH, SLIDE	
29	DY4-2676-000 000	C	1	SWITCH	
30	DY4-2660-000 000	C	1	BAND, TENSION	
31	DY4-2727-000 000	F	1	SCREW, CROSS-RECESS	
32	DY4-2725-000 000	C	1	PLATE, SWITCH	
33	DY4-2728-000 000	F	2	SCREW, CROSS-RECESS	
34	DY4-2690-000 000	C	1	PLATE, TL	
35	DY4-2669-000 000	C	1	ARM	
36	DY4-2724-000 000	C	1	SPRING, COIL	
37	DY4-2717-000 000	C	1	ARM, ADJUST	
38	DY4-2705-000 000	C	1	SPRING, COIL	
39	DY4-2701-000 000	C	1	FLANGE, TG2	
40	DY4-2704-000 000	C	1	SLEEVE, TG2	
41	DY4-2702-000 000	C	1	ROLLER, TG2	
42	DY4-2703-000 000	C	1	FLANGE, TG2	
43	DY4-2914-000 000	C	1	STOPPER	

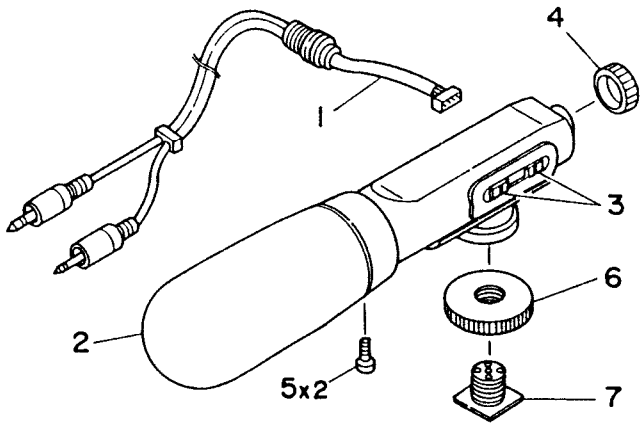
Mechanical Chassis Section 3



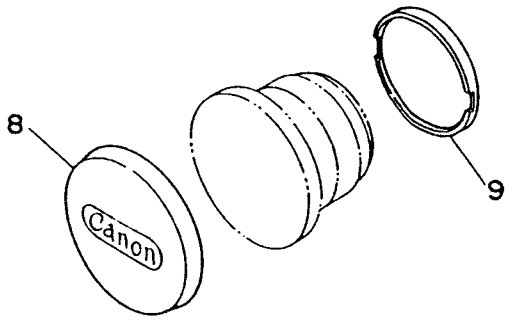
MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DY4-2674-000 000	C	1	ROLLER, GUIDE	
2	DY4-2649-000 000	C	1	COASTER, RIGHT	
3	DY4-2686-000 000	F	2	SCREW, CROSS-RECESS	
4	DY4-2685-000 000	C	2	SPRING, LEAF	
5	DY4-2689-000 000	F	2	SCREW, CROSS-RECESS	
6	DY4-2648-000 000	C	1	COASTER, LEFT	
7	DY4-2662-000 000	C	1	ROLLER, GUIDE	
8	DY4-2672-000 000	C	1	PLATE, SS	
9	DY4-2728-000 000	F	4	SCREW, CROSS-RECESS	
10	DY4-2919-000 000	C	1	WORM ASS'Y	
11	DY4-2665-000 000	C	1	ARM, PINCH SUB	
12	DY4-2706-000 000	C	1	SPRING, COIL	
13	DY4-2688-000 000	F	5	WASHER	
14	DY4-2922-000 000	C	1	PULLEY, RELAY B	
15	DY4-2659-000 000	C	1	BRAKE, TS	
16	DY4-2656-000 000	C	1	GEAR, JOINT	
17	DY4-2719-000 000	E	1	BELT(S), TIMING	
18	DY4-2681-000 000	F	3	WASHER	
19	DY4-2671-000 000	C	1	PULLEY, RELAY A	
20	DY4-2923-000 000	C	1	BELT(L), TIMING	
21	DY4-2684-000 000	C	1	PLATE, TT	
22	DY4-2743-000 000	C	1	GEAR	
23	DY4-2440-000 000	F	2	WASHER	
24	DY4-2742-000 000	C	1	GEAR	
25	DY4-2700-000 000	C	1	SPRING	
26	DY4-2527-000 000	F	1	WASHER	
27	DY4-2695-000 000	C	1	ARM, UL	
28	DY4-2694-000 000	C	1	GEAR, UL	
29	DY4-2698-000 000	C	1	SPRING, COIL	
30	DY4-2650-000 000	C	1	GEAR ASS'Y	
31	DY4-2915-000 000	C	1	GEAR, RC	
32	DY4-2918-000 000	C	1	GEAR, RK	
33	DY4-2693-000 000	C	1	ARM, RELEASE	
34	DY4-2715-000 000	C	1	BRAKE, UL	
35	DY4-2711-000 000	C	1	LEVER, EJECT	
36	DY4-2924-000 000	C	1	GEAR, WHEEL	

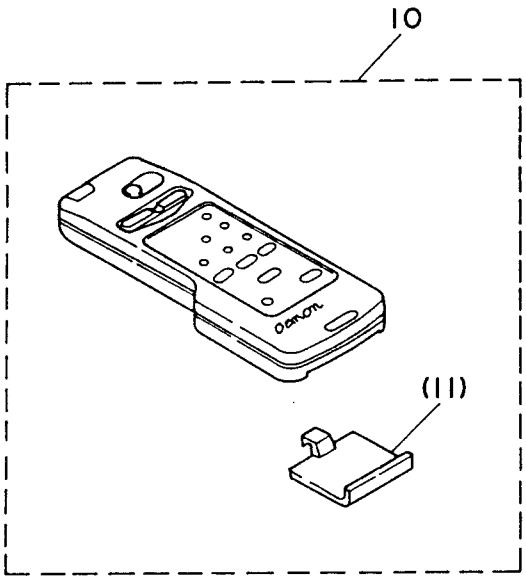
Accessory Parts Section



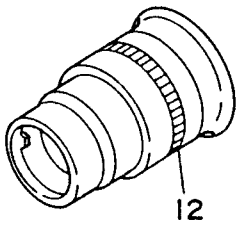
MM-200



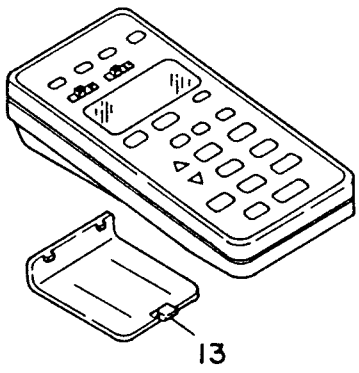
WD-46,TL-46



WL-200



SF-200



VE-100

MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DH2-1072-000 000	C	1	CORD ASS'Y	
2	DA8-0199-000 000	B	1	WIND SCREEN	
3	DA8-0195-000 000	C	2	SLIDE SWITCH	
4	DA8-0194-000 000	B	1	KNOB	
5	XB4-6201-609 000	F	2	SCREW, CROSS-RECESS	
6	CA4-4292-000 000	C	1	RING	
7	DA8-0188-000 000	C	1	SHOE	
8	DA7-1931-000 000	C	1	CAP, LENS	
9	DA7-1932-000 000	C	1	CAP, DUST	
10	DY2-1165-000 000	B	1	WIRELESS CONTROLLER WL-200	E850HiE ONLY
	DY2-1192-000 000	B	1	WIRELESS CONTROLLER WL-200	E850HiF ONLY
11	DY3-4197-000 000	B	1	COVER, BATTERY	
12	DY2-1223-000 000	B	1	SPORTS FINDER SF-200	
13	DY2-4361-000 000	B	1	COVER, BATTERY	

ELECTRICAL PARTS

	SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
⚠	C2912	VC5-9850-332 000	D	1	CAPACITOR, FILM 3300pF/100V	
⚠	C2915	VC5-9520-102 000	D	1	CAPACITOR, CERA. 1000pF/1KV	
⚠	C2917	VC6-1570-152 000	D	1	CAPACITOR, CERA. 1500pF/500V	
	CN001	VS1-1169-013 000	C	1	CONNECTOR 13P	
	CN002	VS1-5149-005 000	C	1	CONNECTOR 5P	
	CN021	VS1-0875-011 000	C	1	CONNECTOR 11P	
	CN022	VS1-5149-013 000	C	1	CONNECTOR 13P	
	CN023	VS1-5149-027 000	C	1	CONNECTOR 27P	
	CN024	VS1-5149-013 000	C	1	CONNECTOR 13P	
	CN201	VS1-5172-018 000	C	1	CONNECTOR 18P	
	CN202	VS1-0875-022 000	C	1	CONNECTOR 22P	
	CN204	VS1-5127-024 000	C	1	CONNECTOR 24P	
	CN502	VS1-5149-027 000	C	1	CONNECTOR 27P	
	CN508	VS1-1169-015 000	C	1	CONNECTOR 15P	
	CN509	VS1-5149-010 000	C	1	CONNECTOR 10P	
	CN510	VS1-1169-005 000	C	1	CONNECTOR 5P	
	CN513	VS1-5127-024 000	C	1	CONNECTOR 24P	
	CN782	VS1-5106-018 000	C	1	CONNECTOR 18P	
	CN787	DH9-0341-000 000	C	1	PIN JACK ASS'Y	
	CN2002	VS1-1020-006 000	C	1	CONNECTOR 6P	
	CN2004	VS1-5108-016 000	C	1	CONNECTOR 16P	
	CN2005	VS1-5108-012 000	C	1	CONNECTOR 12P	
	CN2201	VS1-5106-016 000	C	1	CONNECTOR 16P	
	CN2202	VS1-5106-012 000	C	1	CONNECTOR 12P	
	CN2203	VS1-5106-020 000	C	1	CONNECTOR 20P	
	CN2701	VS1-5108-016 000	C	1	CONNECTOR 16P	
	CN2702	VS1-5108-020 000	C	1	CONNECTOR 20P	
	CN2809	VS1-5106-016 000	C	1	CONNECTOR 16P	
	CN2810	VS1-1169-025 000	C	1	CONNECTOR 25P	
	CN3001	VS1-1169-025 000	C	1	CONNECTOR 25P	
	D001	WA1-1226-000 000	B	1	DIODE MA141WK	
	D002	WA1-1226-000 000	B	1	DIODE MA141WK	
	D003	WA1-1226-000 000	B	1	DIODE MA141WK	
	D004	WA1-1226-000 000	B	1	DIODE MA141WK	
	D005	WA1-1226-000 000	B	1	DIODE MA141WK	
	D006	WA1-1226-000 000	B	1	DIODE MA141WK	
	D007	WA1-1226-000 000	B	1	DIODE MA141WK	
	D301	WA1-0380-000 000	B	1	DIODE MA157	
	D302	WA1-0380-000 000	B	1	DIODE MA157	
	D303	WA1-1164-000 000	B	1	DIODE DAN202U	
	D304	WA1-1084-000 000	B	1	DIODE MA110	
	D305	WA1-1164-000 000	B	1	DIODE DAN202U	
	D307	WA1-1164-000 000	B	1	DIODE DAN202U	
	D501	WA1-1084-000 000	B	1	DIODE MA110	
	D502	WA1-1084-000 000	B	1	DIODE MA110	
	D503	WA1-1084-000 000	B	1	DIODE MA110	
	D505	WA1-1084-000 000	B	1	DIODE MA110	
	D506	WA1-1146-000 000	B	1	DIODE MA707	
	D507	WA1-0604-000 000	B	1	DIODE MA159	
	D508	WA1-1146-000 000	B	1	DIODE MA707	
	D514	WA1-0380-000 000	B	1	DIODE MA157	
	D517	WA1-0989-000 000	B	1	DIODE MA3100W	
	D518	WA1-1203-000 000	B	1	DIODE MA141WA	
	D519	WA1-5080-000 000	B	1	DIODE EC10QS03	
	D520	WA1-5080-000 000	B	1	DIODE EC10QS03	
	D521	WA1-1084-000 000	B	1	DIODE MA110	
	D524	WA1-1146-000 000	B	1	DIODE MA707	
	D525	WA1-1084-000 000	B	1	DIODE MA110	
	D526	WA1-0604-000 000	B	1	DIODE MA159	
	D527	WA1-1084-000 000	B	1	DIODE MA110	

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
D528	WA1-0617-000 000	B	1	DIODE MA3100	
D792	WA1-1164-000 000	B	1	DIODE DAN202U	
D801	WA1-1084-000 000	B	1	DIODE MA110	
D901	WA1-1164-000 000	B	1	DIODE DAN202U	
D902	WA1-1084-000 000	B	1	DIODE MA110	
D903	WA1-1084-000 000	B	1	DIODE MA110	
D904	WA1-1084-000 000	B	1	DIODE MA110	
D905	WA1-5061-000 000	B	1	DIODE DAP202U	
D2001	WA1-1084-000 000	B	1	DIODE MA110	
D2002	WA1-5091-000 000	B	1	VARIABLE CAPACITANCE DIODE 1SV205	
D2003	WA1-1153-000 000	B	1	DIODE DA204U	
D2004	WA1-0962-000 000	B	1	DIODE MA121	
D2005	WA1-1084-000 000	B	1	DIODE MA110	
D2006	WA1-1084-000 000	B	1	DIODE MA110	
D2007	WA1-1153-000 000	B	1	DIODE DA204U	
D2151	WA1-1084-000 000	B	1	DIODE MA110	
D2201	WA1-1084-000 000	B	1	DIODE MA110	
D2202	WA1-1084-000 000	B	1	DIODE MA110	
D2203	WA1-1084-000 000	B	1	DIODE MA110	
D2401	WA1-1194-000 000	B	1	DIODE MA728	
D2402	WA1-5061-000 000	B	1	DIODE DAP202U	
D2602	WA1-5061-000 000	B	1	DIODE DAP202U	
D2801	WA1-1084-000 000	B	1	DIODE MA110	
D2803	WA1-1084-000 000	B	1	DIODE MA110	
D2901	WA1-0989-000 000	B	1	DIODE MA3100W	
D2902	WA1-1084-000 000	B	1	DIODE MA110	
D2903	WA1-1084-000 000	B	1	DIODE MA110	
D2904	WA1-1123-000 000	B	1	DIODE AG01Z	
⚠ D2905	WA1-1124-000 000	D	1	DIODE SHV02	
D2951	WA1-1084-000 000	B	1	DIODE MA110	
D2961	WA1-0384-000 000	B	1	ZENER DIODE RD5.6MB2	
D3001	WA1-5091-000 000	B	1	VARIABLE CAPACITANCE DIODE 1SV205	
D3101	WA1-1084-000 000	B	1	DIODE MA110	
FT2931	WE2-0414-000 000	C	1	FILTER, NOISE	
IC201	DH4-0263-000 000	B	1	IC CXA1207R	
IC202	DH4-0264-000 000	B	1	IC CXA1208R	
IC203	DH4-0297-000 000	B	1	IC CXL1506M	
IC204	DH4-0297-000 000	B	1	IC CXL1506M	
IC301	DH4-0205-000 000	B	1	IC LVC556F-2	
IC501	WA4-5129-000 000	B	1	IC S-87050AF	
IC502	DH4-0236-000 000	B	1	IC MM1019	
IC503	DH4-0275-000 000	B	1	IC μPD75008GB-612	
IC504	DH4-0299-000 000	B	1	IC CXP80116-552Q	
IC505	DH4-0135-000 000	B	1	IC CXA1204Q	
IC506	DH4-0318-000 000	B	1	IC CXA1127AM	
IC507	WA4-5161-000 000	B	1	IC CXA1512M	
IC508	WA4-5127-000 000	B	1	IC CXA8006M	
IC509	DH4-0213-000 000	B	1	IC μPD7564G-533	
IC510	DH4-0205-000 000	B	1	IC LVC556F-2	
IC783	DH4-0224-000 000	B	1	IC MM1003	
IC785	WA4-1292-000 000	B	1	IC LVA522F-2	
IC801	DH4-0190-000 000	B	1	IC CXA1237AR	
IC802	DH4-0190-000 000	B	1	IC CXA1237AR	
IC803	WA3-4150-000 000	B	1	IC BU4011BF	
IC901	WA4-0509-000 000	B	1	IC NJM2043M	
IC902	WA4-0266-000 000	B	1	IC NJM4558M	
IC903	WA4-0266-000 000	B	1	IC NJM4558M	
IC904	WA4-0363-000 000	B	1	IC NJM4556MB	
IC905	WA4-0349-000 201	B	1	IC NJM2904M	
IC908	DH4-0205-000 000	B	1	IC LVC556F-2	

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
IC2001	DH4-0245-000 000	B	1	IC MN5139	
IC2002	DH4-0125-000 000	B	1	IC MN53015CXY	
IC2003	WA3-5362-000 000	B	1	IC MN3107CS	
IC2005	WA4-0901-000 000	B	1	IC AN2011S	
IC2006	DH4-0230-000 000	B	1	IC MN3824S	
IC2101	DH4-0395-000 000	B	1	IC M50727-472FP	
IC2102	WA3-5638-000 000	B	1	IC SC7S02F	
IC2151	WA4-5125-000 000	B	1	IC NJM311M	
IC2201	WA4-0458-000 000	B	1	IC NJM3414M	
IC2202	DH4-0228-000 000	B	1	IC AN2154FAP	
IC2401	DH4-0229-000 000	B	1	IC AN2254FAP	
IC2402	WA3-3358-000 000	B	1	IC MC74HC4053F	
IC2601	DH4-0295-000 000	B	1	IC M37450M4-318FP	
IC2602	WA3-5392-000 000	B	1	IC S-2917IF01	
IC2603	WA3-3175-000 000	B	1	IC BU4066BF	
IC2604	WA4-1248-000 000	B	1	IC μPC324G2	
IC2605	WA4-1248-000 000	B	1	IC μPC324G2	
IC2606	WA4-1293-000 000	B	1	IC PST529CMT	
IC2607	WA4-1248-000 000	B	1	IC μPC324G2	
IC2801	DH4-0281-000 000	B	1	IC LD5077	
IC2802	WA4-0349-000 201	B	1	IC NJM2904M	
IC2803	DH4-0294-000 000	B	1	IC M37450M4-319FP	
IC2804	WA3-3938-000 000	B	1	IC SC14S81F	
IC2805	WA4-5141-000 000	B	1	IC MM1036XFF	
IC2806	WA4-5141-000 000	B	1	IC MM1036XFF	
IC2807	DH4-0280-000 000	B	1	IC CM7056	
IC2808	WA3-5173-000 000	B	1	IC SC7S00FEL	
IC2901	WA4-1322-000 000	B	1	IC AN2514S	
IC2931	DH4-0205-000 000	B	1	IC LVC556F-2	
IC2941	DH4-0284-000 000	B	1	IC μPD6145G-619	
IC2951	WA3-5122-000 000	B	1	IC SC7S32FEL	
IC3001	DH4-0392-000 000	B	1	IC M37450M4-509FP	
IC3002	WA3-1248-000 000	B	1	IC TC4066BF	
IC3003	DH4-0383-000 000	B	1	IC DH4-0383	
IC3004	WA3-6024-000 000	B	1	IC MB8464A-15LL	
IC3005	DH4-0632-000 000	B	1	IC μPD6144AG-604	
IC3006	DH4-0394-000 000	B	1	IC MN17601-DX-S	
IC3007	DH4-0396-000 000	B	1	IC SVM-7570M6A	
IC3008	WA3-3564-000 000	B	1	IC TC7S04	
⚠ L2902	DH9-0459-000 000	D	1	COIL 184μH	
LED901	WG1-0427-000 000	B	1	LED LT1D51A	
Q201	WA2-1231-000 000	B	1	TRANSISTOR IMH8	
Q202	WA2-1231-000 000	B	1	TRANSISTOR IMH8	
Q204	WA2-5131-000 000	B	1	TRANSISTOR RU201	
Q205	WA2-5051-000 000	B	1	TRANSISTOR DTA144EU	
Q207	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q208	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q209	WA2-1230-000 000	B	1	TRANSISTOR IMH6	
Q210	WA2-5051-000 000	B	1	TRANSISTOR DTA144EU	
Q211	WA2-1230-000 000	B	1	TRANSISTOR IMH6	
Q212	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q213	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q214	WA2-5168-000 000	B	1	FET 2SK879 (Y,GR)	
Q253	WA2-1232-000 000	B	1	TRANSISTOR IMZ1	
Q254	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q255	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q257	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q258	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q301	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q302	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
Q303	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q305	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q306	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q307	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q308	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q309	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q310	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q311	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q312	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q313	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q314	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q315	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q316	WA2-5062-000 000	B	1	TRANSISTOR DTC144TU	
Q317	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q318	WA2-5092-000 000	B	1	TRANSISTOR IMX5	
Q321	WA2-5092-000 000	B	1	TRANSISTOR IMX5	
Q323	WA2-5051-000 000	B	1	TRANSISTOR DTA144EU	
Q324	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q326	WA2-1416-000 000	B	1	TRANSISTOR IMB5	
Q327	WA2-1416-000 000	B	1	TRANSISTOR IMB5	
Q328	WA2-1198-000 000	B	1	TRANSISTOR IMD2	
Q331	WA2-1232-000 000	B	1	TRANSISTOR IMZ1	
Q332	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q333	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q334	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q336	WA2-5149-000 000	B	1	TRANSISTOR 2SB1412F5	
Q337	WA2-5152-000 000	B	1	TRANSISTOR 2SB1424	
Q338	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q340	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q342	WA2-5168-000 000	B	1	FET 2SK879 (Y,GR)	
Q343	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q344	WA2-1405-000 000	B	1	TRANSISTOR DTA124EU	
Q346	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q349	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q350	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q351	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q353	WA2-5051-000 000	B	1	TRANSISTOR DTA144EU	
Q355	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q356	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q357	WA2-5051-000 000	B	1	TRANSISTOR DTA144EU	
Q358	WA2-5169-000 000	B	1	FET 2SK880 (GR,BL)	
Q361	WA2-5092-000 000	B	1	TRANSISTOR IMX5	
Q363	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q365	WA2-5105-000 000	B	1	TRANSISTOR DTA144TU	
Q368	WA2-1198-000 000	B	1	TRANSISTOR IMD2	
Q369	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q371	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q372	WA2-1230-000 000	B	1	TRANSISTOR IMH6	
Q373	WA2-1230-000 000	B	1	TRANSISTOR IMH6	
Q375	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q376	WA2-5169-000 000	B	1	FET 2SK880 (GR,BL)	
Q377	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q378	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q399	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q501	WA2-1099-000 000	B	1	TRANSISTOR FMW1	
Q502	WA2-1099-000 000	B	1	TRANSISTOR FMW1	
Q503	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q504	WA2-5051-000 000	B	1	TRANSISTOR DTA144EU	
Q506	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q507	WA2-1231-000 000	B	1	TRANSISTOR IMH8	

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
Q508	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q509	WA2-5051-000 000	B	1	TRANSISTOR DTA144EU	
Q510	WA2-1377-000 000	B	1	TRANSISTOR DTC143EU	
Q511	WA2-1407-000 000	B	1	TRANSISTOR DTC114TU	
Q512	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q513	WA2-5088-000 000	B	1	TRANSISTOR DTC114EU	
Q514	WA2-1230-000 000	B	1	TRANSISTOR IMH6	
Q515	WA2-5152-000 000	B	1	TRANSISTOR 2SB1424	
Q516	WA2-5152-000 000	B	1	TRANSISTOR 2SB1424	
Q517	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q518	WA2-1231-000 000	B	1	TRANSISTOR IMH8	
Q519	WA2-1231-000 000	B	1	TRANSISTOR IMH8	
Q520	WA2-5152-000 000	B	1	TRANSISTOR 2SB1424	
Q521	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q522	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q523	WA2-5152-000 000	B	1	TRANSISTOR 2SB1424	
Q524	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q525	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q527	WA2-5051-000 000	B	1	TRANSISTOR DTA144EU	
Q528	WA2-1232-000 000	B	1	TRANSISTOR IMZ1	
Q529	WA2-1231-000 000	B	1	TRANSISTOR IMH8	
Q530	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q531	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q532	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q533	WA2-5148-000 000	B	1	TRANSISTOR DTA144WU	
Q552	WA2-5062-000 000	B	1	TRANSISTOR DTC144TU	
Q553	WA2-1231-000 000	B	1	TRANSISTOR IMH8	
Q554	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q555	WA2-5122-000 000	B	1	TRANSISTOR FC101	
Q561	WA2-1405-000 000	B	1	TRANSISTOR DTA124EU	
Q562	WA2-1377-000 000	B	1	TRANSISTOR DTC143EU	
Q781	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q801	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q802	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q804	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q806	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q807	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q808	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q901	WA2-0646-000 000	B	1	TRANSISTOR 2SD1328	
Q902	WA2-0646-000 000	B	1	TRANSISTOR 2SD1328	
Q903	WA2-0646-000 000	B	1	TRANSISTOR 2SD1328	
Q904	WA2-0646-000 000	B	1	TRANSISTOR 2SD1328	
Q905	WA2-0646-000 000	B	1	TRANSISTOR 2SD1328	
Q906	WA2-0646-000 000	B	1	TRANSISTOR 2SD1328	
Q907	WA2-0646-000 000	B	1	TRANSISTOR 2SD1328	
Q908	WA2-5051-000 000	B	1	TRANSISTOR DTA144EU	
Q909	WA2-0646-000 000	B	1	TRANSISTOR 2SD1328	
Q910	WA2-0646-000 000	B	1	TRANSISTOR 2SD1328	
Q950	WA2-1437-000 000	B	1	TRANSISTOR 2SB1121(S,T)	
Q951	WA2-1416-000 000	B	1	TRANSISTOR IMB5	
Q952	WA2-5062-000 000	B	1	TRANSISTOR DTC144TU	
Q953	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q954	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q955	WA2-5051-000 000	B	1	TRANSISTOR DTA144EU	
Q2001	WA2-1501-000 000	B	1	FET 2SK198	
Q2002	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q2003	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q2004	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q2005	WA2-1172-000 000	B	1	TRANSISTOR 2SA1461	
Q2006	WA2-0052-000 000	B	1	TRANSISTOR 2SC1621	

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
Q2007	WA2-1172-000 000	B	1	TRANSISTOR 2SA1461	
Q2008	WA2-0052-000 000	B	1	TRANSISTOR 2SC1621	
Q2009	WA2-1172-000 000	B	1	TRANSISTOR 2SA1461	
Q2010	WA2-0052-000 000	B	1	TRANSISTOR 2SC1621	
Q2011	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q2012	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q2101	WA2-1231-000 000	B	1	TRANSISTOR IMH8	
Q2102	WA2-1231-000 000	B	1	TRANSISTOR IMH8	
Q2103	WA2-1231-000 000	B	1	TRANSISTOR IMH8	
Q2104	WA2-5051-000 000	B	1	TRANSISTOR DTA144EU	
Q2105	WA2-5051-000 000	B	1	TRANSISTOR DTA144EU	
Q2201	WA2-1256-000 000	B	1	TRANSISTOR IMH5	
Q2202	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q2205	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q2206	WA2-1232-000 000	B	1	TRANSISTOR IMZ1	
Q2207	WA2-1232-000 000	B	1	TRANSISTOR IMZ1	
Q2208	WA2-1228-000 000	B	1	TRANSISTOR IMT2	
Q2209	WA2-1256-000 000	B	1	TRANSISTOR IMH5	
Q2210	WA2-1232-000 000	B	1	TRANSISTOR IMZ1	
Q2211	WA2-1232-000 000	B	1	TRANSISTOR IMZ1	
Q2212	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q2213	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q2214	WA2-1232-000 000	B	1	TRANSISTOR IMZ1	
Q2215	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q2216	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q2217	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q2218	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q2401	WA2-1351-000 000	B	1	TRANSISTOR IMD6	
Q2402	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q2403	WA2-1232-000 000	B	1	TRANSISTOR IMZ1	
Q2405	WA2-1228-000 000	B	1	TRANSISTOR IMT2	
Q2409	WA2-1297-000 000	B	1	TRANSISTOR IMB7	
Q2410	WA2-1228-000 000	B	1	TRANSISTOR IMT2	
Q2411	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q2412	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q2413	WA2-1228-000 000	B	1	TRANSISTOR IMT2	
Q2414	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q2415	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q2416	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q2417	WA2-1228-000 000	B	1	TRANSISTOR IMT2	
Q2418	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q2419	WA2-1351-000 000	B	1	TRANSISTOR IMD6	
Q2420	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q2421	WA2-1228-000 000	B	1	TRANSISTOR IMT2	
Q2422	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q2601	WA2-1256-000 000	B	1	TRANSISTOR IMH5	
Q2602	WA2-1232-000 000	B	1	TRANSISTOR IMZ1	
Q2603	WA2-1256-000 000	B	1	TRANSISTOR IMH5	
Q2801	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q2802	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q2803	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q2804	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q2806	WA2-1198-000 000	B	1	TRANSISTOR IMD2	
Q2901	WA2-0839-000 000	B	1	TRANSISTOR 2SA1226	
Q2902	WA2-1498-000 000	B	1	TRANSISTOR 2SA1162	
Q2903	WA2-0393-000 201	B	1	TRANSISTOR 2SA1162	
⚠ Q2904	WA2-5151-000 000	D	1	TRANSISTOR 2SD968A-S	
Q2931	WA2-0797-000 201	B	1	TRANSISTOR 2SA1213	
Q2951	WA2-0393-000 201	B	1	TRANSISTOR 2SA1162	
Q2952	WA2-0735-000 201	B	1	TRANSISTOR 2SC2712	

ELECTRICAL PARTS

	SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
	Q2953	WA2-0735-000 201	B	1	TRANSISTOR 2SC2712	
	Q2961	WA2-1237-000 000	B	1	TRANSISTOR DTA144TK	
	Q3001	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
	Q3002	WA2-5226-000 000	B	1	TRANSISTOR IMB11	
	Q3101	WA2-1232-000 000	B	1	TRANSISTOR IMZ1	
	Q3102	WA2-5227-000 000	B	1	TRANSISTOR IMH11	
	Q3103	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
	Q3104	WA2-0646-000 000	B	1	TRANSISTOR 2SD1328(R,S,T)	
	Q3105	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
	Q3106	WA2-1232-000 000	B	1	TRANSISTOR IMZ1	
⚠	RR301	DH4-0143-000 000	D	1	LINK, IC ICP-F20	
⚠	RR501	DH4-0144-000 000	D	1	LINK, IC ICP-F25	
⚠	RR2931	DH4-0142-000 000	D	1	LINK, IC ICP-F15	
⚠	RR2932	DH4-0142-000 000	D	1	LINK, IC ICP-F15	
⚠	RR2933	DH4-0142-000 000	D	1	LINK, IC ICP-F15	
⚠	RR2934	DH4-0166-000 000	D	1	LINK, IC D2000	
⚠	T2901	DH9-0456-000 000	D	1	FLYBACK TRANSFORMER	
	TH2901	WA8-0195-000 000	C	1	THERMISTER	
	VC2001	VC6-0340-100 000	C	1	CAPACITOR, TRIMMER 10pF	
	VC2002	VC6-0340-200 000	C	1	CAPACITOR, TRIMMER 20pF	
	VC2401	VC6-0340-300 000	C	1	CAPACITOR, TRIMMER 30pF	
	VC2801	VC6-0340-300 000	C	1	CAPACITOR, TRIMMER 30pF	
	VC2941	VC5-9700-300 000	C	1	CAPACITOR, TRIMMER 30pF	
	VC3001	VC6-0340-200 000	C	1	CAPACITOR, TRIMMER 20pF	
	VC3002	VC6-0340-300 000	C	1	CAPACITOR, TRIMMER 30pF	
	VR201	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
	VR202	VR5-7780-473 000	C	1	RESISTOR, VARIABLE 47KΩ	
	VR203	VR5-7780-473 000	C	1	RESISTOR, VARIABLE 47KΩ	
	VR204	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
	VR206	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	
	VR207	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	
	VR208	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	
	VR210	VR5-7780-102 000	C	1	RESISTOR, VARIABLE 1KΩ	
	VR211	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
	VR302	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	
	VR303	VR5-7780-104 000	C	1	RESISTOR, VARIABLE 100KΩ	
	VR304	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	
	VR305	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	
	VR306	VR5-7780-102 000	C	1	RESISTOR, VARIABLE 1KΩ	
	VR308	VR5-7780-471 000	C	1	RESISTOR, VARIABLE 470Ω	
	VR309	VR5-7780-101 000	C	1	RESISTOR, VARIABLE 100Ω	
	VR501	VR7-0670-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
	VR503	VR7-0670-103 000	C	1	RESISTOR, VARIABLE 10KΩ	
	VR504	VR7-0670-103 000	C	1	RESISTOR, VARIABLE 10KΩ	
	VR803	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
	VR804	VR5-7780-473 000	C	1	RESISTOR, VARIABLE 47KΩ	
	VR805	VR5-7780-103 000	C	1	RESISTOR, VARIABLE 10KΩ	
	VR806	VR5-7780-103 000	C	1	RESISTOR, VARIABLE 10KΩ	
	VR807	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	
	VR808	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	
	VR2001	VR5-7780-103 000	C	1	RESISTOR, VARIABLE 10KΩ	
	VR2201	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	
	VR2202	VR5-7780-103 000	C	1	RESISTOR, VARIABLE 10KΩ	
	VR2203	VR5-7780-103 000	C	1	RESISTOR, VARIABLE 10KΩ	
	VR2204	VR5-7780-103 000	C	1	RESISTOR, VARIABLE 10KΩ	
	VR2205	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	
	VR2401	VR5-7780-103 000	C	1	RESISTOR, VARIABLE 10KΩ	
	VR2402	VR5-7780-103 000	C	1	RESISTOR, VARIABLE 10KΩ	
	VR2403	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	
	VR2701	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	

REF.No.D15-5130,5131

ELECTRICAL PARTS

	SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
	VR2801	VR5-7780-103 000	C	1	RESISTOR, VARIABLE 10KΩ	
	VR2802	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	
	VR2803	VR5-7780-104 000	C	1	RESISTOR, VARIABLE 100KΩ	
	VR2901	VR5-7680-201 000	C	1	RESISTOR, VARIABLE 200Ω	
	VR2902	VR5-7680-503 000	C	1	RESISTOR, VARIABLE 50KΩ	
⚠	VR2903	VR5-4640-205 000	D	1	RESISTOR, VARIABLE 2MΩ	
⚠	VR2904	VR5-4640-504 000	D	1	RESISTOR, VARIABLE 500KΩ	
	VR2961	VR5-7680-503 000	C	1	RESISTOR, VARIABLE 50KΩ	

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
14	CA4-4292-000 000	C	1	RING	
2	DA1-1864-000 000	B	1	RING, RUBBER	
6	DA1-1900-000 000	F	4	SCREW, CROSS-RECESS	
2	DA1-1948-000 000	F	1	SCREW, CROSS-RECESS	
6	DA1-2349-000 000	C	1	PLATE, GROUND	
2	DA1-2460-000 000	B	1	KNOB, T/W	
2	DA1-2461-000 000	C	1	PLATE	
2	DA1-2463-000 000	C	2	TERMINAL, BATTERY	
2	DA1-2476-000 000	B	1	HOOD	
2	DA1-2486-000 000	B	1	SHOE, ACCESSORY	
2	DA1-2489-000 000	B	1	SHEET, ACCESSORY SHOE	
2	DA1-2948-000 000	B	1	STRAP, HAND	
4	DA1-3601-000 000	C	1	HOLDER, CAMERA (1)	
4	DA1-3602-000 000	C	1	HOLDER, CAMERA (2)	
4	DA1-3610-000 000	F	1	PLATE, TRIPOD	
2	DA1-3659-000 000	C	1	PLATE	
4	DA1-3690-000 000	C	1	SHEET, PROTECT	
2	DA1-4405-000 000	B	2	SEAL	
2	DA1-4428-000 000	B	1	KNOB, BATTERY EJECT	
2	DA1-4429-000 000	B	1	RING, E.V.F.	
2	DA1-4444-000 000	B	1	PLATE, IN SULATION	
2	DA1-4455-000 000	C	1	HOLDER (2), RECORDER	
2	DA1-4456-000 000	B	1	SWITCH	
2	DA1-4460-000 000	B	1	COVER, LENS	
2	DA1-4464-000 000	B	1	COVER, BATTERY	
2	DA1-4465-000 000	B	1	CAP, AV	
2	DA1-4466-000 000	B	1	KNOB, GRIP	
2	DA1-4477-000 000	B	1	SHAFT	
2	DA1-4747-000 000	B	1	COVER, SWITCH	E8 50HiF ONLY
2	DA1-4748-000 000	B	1	COVER, SWITCH	E8 50HiE ONLY
4	DA7-1458-000 000	C	1	DUMPER, RUBBER	
4	DA7-1724-000 000	C	1	STOPPER, NEARDISTANCE	
4	DA7-1734-000 000	C	1	STOPPER, RUBBER	
4	DA7-1739-000 000	C	1	COVER, IG METER	
4	DA7-1792-000 000	C	1	BLING, IG METER (B)	
14	DA7-1931-000 000	C	1	CAP, LENS	
14	DA7-1932-000 000	C	1	CAP, DUST	
14	DA8-0188-000 000	C	1	SHOE	
14	DA8-0194-000 000	B	1	KNOB	
14	DA8-0195-000 000	C	2	SLIDE SWITCH	
14	DA8-0199-000 000	B	1	WIND SCREEN	
2	DF1-0512-000 000	B	1	CAP, LENS	
4	DF1-0754-000 000	C	1	LITHIUM ASS'Y	
6	DF1-0756-000 000	C	1	PRINTED CORD ASS'Y	
6	DF1-0757-000 000	C	1	PRINTED CORD ASS'Y	
6	DF1-0759-000 000	C	1	HOLDER (1), RECORDER	
2	DF1-1128-000 000	B	1	COVER, CASSETTE	
6	DG1-1228-000 000	C	1	RECORDER KEY C.B.A.	
2	DG1-1230-000 000	C	1	MIC. JACK C.B.A.	
2	DG1-1236-000 000	C	1	REMOCON C.B.A.	
6	DG1-1248-000 000	C	1	POWER EJECT C.B.A.	
4	DG1-1249-000 000	C	1	SENSOR C.B.A.	
4	DG1-1250-000 000	C	1	PROCESS C.B.A.	
6	DG1-1252-000 000	C	1	CJ C.B.A.	
6	DG1-1257-000 000	C	1	SYSCON SERVO C.B.A.	
2	DG1-1260-000 000	C	1	GRIP C.B.A.	
4	DG1-1578-000 000	C	1	DIGITAL MEMORY C.B.A.	
2	DG1-1853-000 000	C	1	CAMERA KEY C.B.A.	
4	DG1-1854-000 000	C	1	AUTO FOCUS C.B.A.	E8 50HiE ONLY
4	DG1-1855-000 000	C	1	AUTO FOCUS C.B.A.	E8 50HiF ONLY

PARTS LIST

	PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
	6	DG1-1856-000 000	C	1	AUDIO VIDEO C.B.A.	
	2	DG1-1859-000 000	B	1	LEFT COVER, GRIP	
	4	DG9-3384-000 000	C	1	RELAY LENS ASS'Y	
	14	DH2-1072-000 000	C	1	CORD ASS'Y	
	6	DH2-1229-000 000	C	1	PRINTED CORD	
	6	DH2-1230-000 000	C	1	PRINTED CORD	
	6	DH2-1241-000 000	C	1	PRINTED CORD	
	6	DH2-1242-000 000	C	1	PRINTED CORD	
	6	DH2-1244-000 000	C	1	PRINTED CORD	
	6	DH2-1250-000 000	C	1	CONNECTOR 11P	
	2	DH2-1402-000 000	C	1	PRINTED CORD	
	4	DH3-0021-000 000	C	1	DC/DC CONVERTER	
		DH4-0125-000 000	B	1	IC MN53015CXY	
		DH4-0135-000 000	B	1	IC CXA1204Q	
⚠		DH4-0142-000 000	D	3	LINK, IC ICP-F15	
⚠		DH4-0143-000 000	D	1	LINK, IC ICP-F20	
⚠		DH4-0144-000 000	D	1	LINK, IC ICP-F25	
⚠		DH4-0166-000 000	D	1	LINK, IC D2000	
		DH4-0190-000 000	B	2	IC CXA1237AR	
		DH4-0205-000 000	B	4	IC LVC556F-2	
		DH4-0213-000 000	B	1	IC µPD7564G-533	
		DH4-0224-000 000	B	1	IC MM1003	
		DH4-0228-000 000	B	1	IC AN2154FAP	
		DH4-0229-000 000	B	1	IC AN2254FAP	
		DH4-0230-000 000	D	1	IC MN3824S	
		DH4-0236-000 000	B	1	IC MM1019	
	4	DH4-0242-000 000	B	1	CCD MN3761FSZ	
		DH4-0245-000 000	B	1	IC MN5139	
		DH4-0263-000 000	B	1	IC CXA1207R	
		DH4-0264-000 000	B	1	IC CXA1208R	
		DH4-0275-000 000	B	1	IC µPD75008GB-612	
		DH4-0280-000 000	B	1	IC CM7056	
		DH4-0281-000 000	B	1	IC LD5077	
		DH4-0284-000 000	B	1	IC µPD6145G-619	
		DH4-0294-000 000	B	1	IC M37450M4-319FP	
		DH4-0295-000 000	B	1	IC M37450M4-318FP	
		DH4-0297-000 000	B	2	IC CXL1506M	
		DH4-0299-000 000	B	1	IC CXP80116-552Q	
	6	DH4-0301-000 000	C	1	JOG C.B.A.	
		DH4-0318-000 000	B	1	IC CXA1127AM	
		DH4-0383-000 000	B	1	IC DH4-0383	
		DH4-0392-000 000	B	1	IC M37450M4-509FP	
		DH4-0394-000 000	B	1	IC MN17601-DX-S	
		DH4-0395-000 000	B	1	IC M50727-472FP	
		DH4-0396-000 000	B	1	IC SVM-7570M6A	
		DH4-0632-000 000	B	1	IC µPD6144AG-604	
		DH9-0341-000 000	C	1	PIN JACK ASS'Y	
⚠		DH9-0456-000 000	D	1	FLYBACK TRANSFORMER	
⚠		DH9-0459-000 000	D	1	COIL 184µH	
	2	DH9-0500-000 000	B	1	MICROPHONE ASS'Y	
	2	DS1-5186-000 000	C	1	SPRING	
	4	DS1-5198-000 000	C	1	SPRING, COIL	
	4	DY1-7128-000 000	C	1	ZOOM LENS ASS'Y	
	4	DY1-7129-000 000	C	1	FOCUS LENS ASS'Y	
	4	DY1-7130-000 000	C	1	ZOOM RING ASS'Y	
	2	DY2-1159-000 000	D	1	CRT ASS'Y	
	14	DY2-1165-000 000	B	1	WIRELESS CONTROLLER WL-200	E85 Hi E ONLY
	14	DY2-1192-000 000	B	1	WIRELESS CONTROLLER WL-200	E85 Hi F ONLY
	14	DY2-1223-000 000	B	1	SPORTS FINDER SF-200	
	2	DY2-1276-000 000	B	1	TOP COVER ASS'Y	E85 Hi E ONLY

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
2	DY2-1277-000 000	B	1	TOP COVER ASS'Y	E850HiF ONLY
2	DY2-1278-000 000	B	1	COVER, REAR	E850HiE ONLY
2	DY2-1279-000 000	B	1	COVER, REAR	E850HiF ONLY
2	DY2-1297-000 000	B	1	RIGHT COVER, GRIP	
2	DY2-1332-000 000	B	1	LEFT COVER, ASS'Y	
2	DY2-1371-000 000	B	1	RIGHT COVER, ASS'Y	E850HiE ONLY
2	DY2-1372-000 000	B	1	RIGHT COVER, ASS'Y	E850HiF ONLY
14	DY2-4361-000 000	B	1	COVER, BATTERY	
14	DY3-4197-000 000	B	1	COVER, BATTERY	
2	DY3-4203-000 000	B	1	TOP COVER, MIC	
2	DY3-4204-000 000	B	1	BOTTOM COVER, MIC	
10,12	DY4-2440-000 000	F	3	WASHER	
12	DY4-2527-000 000	F	1	WASHER	
12	DY4-2648-000 000	C	1	COASTER, LEFT	
12	DY4-2649-000 000	C	1	COASTER, RIGHT	
12	DY4-2650-000 000	C	1	GEAR ASS'Y	
12	DY4-2656-000 000	C	1	GEAR, JOINT	
12	DY4-2659-000 000	C	1	BRAKE, TS	
10	DY4-2660-000 000	C	1	BAND, TENSION	
12	DY4-2662-000 000	C	1	ROLLER, GUIDE	
10	DY4-2663-000 000	C	1	REEL, SUPPLY	
10	DY4-2664-000 000	C	1	ARM, TG7	
12	DY4-2665-000 000	C	1	ARM, PINCH SUB	
10	DY4-2666-000 000	C	1	REEL, TAKE UP	
10	DY4-2669-000 000	C	1	ARM	
12	DY4-2671-000 000	C	1	PULLEY, RELAY A	
12	DY4-2672-000 000	C	1	PLATE, SS	
8	DY4-2673-000 000	C	1	CASSETTE COMPARTMENT ASS'Y	
12	DY4-2674-000 000	C	1	ROLLER, GUIDE	
8	DY4-2675-000 000	C	1	TERMINAL, EARTH	
10	DY4-2676-000 000	C	1	SWITCH	
10	DY4-2678-000 000	C	1	SWITCH, PUSH	
10	DY4-2679-000 000	C	1	FLEXIBLE P.C.B. (1)	
10	DY4-2680-000 000	C	1	FLEXIBLE P.C.B. (2)	
10,12	DY4-2681-000 000	F	4	WASHER	
12	DY4-2684-000 000	C	1	PLATE, TT	
12	DY4-2685-000 000	C	2	SPRING, LEAF	
12	DY4-2686-000 000	F	2	SCREW, CROSS-RECESS	
10,12	DY4-2688-000 000	F	6	WASHER	
12	DY4-2689-000 000	F	2	SCREW, CROSS-RECESS	
10	DY4-2690-000 000	C	1	PLATE, TL	
10	DY4-2691-000 000	C	1	BRAKE, LB	
10	DY4-2692-000 000	C	1	LEVER, LB	
12	DY4-2693-000 000	C	1	ARM, RELEASE	
12	DY4-2694-000 000	C	1	GEAR, UL	
12	DY4-2695-000 000	C	1	ARM, UL	
10	DY4-2696-000 000	C	4	PIN, SHAFT	
10	DY4-2697-000 000	C	1	SPRING, COIL	
12	DY4-2698-000 000	C	1	SPRING, COIL	
10	DY4-2699-000 000	C	1	SPRING, COIL	
12	DY4-2700-000 000	C	1	SPRING	
10	DY4-2701-000 000	C	1	FLANGE, TG2	
10	DY4-2702-000 000	C	1	ROLLER, TG2	
10	DY4-2703-000 000	C	1	FLANGE, TG2	
10	DY4-2704-000 000	C	1	SLEEVE, TG2	
10	DY4-2705-000 000	C	1	SPRING, COIL	
12	DY4-2706-000 000	C	1	SPRING, COIL	
10	DY4-2707-000 000	C	1	SPRING, PLATE	
8	DY4-2708-000 000	C	1	SPRING, COIL	
10	DY4-2710-000 000	C	1	HOLDER, LED	

PARTS LIST

	PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
	12	DY4-2711-000 000	C	1	LEVER, EJECT	
	10	DY4-2712-000 000	C	1	ARM, RELEASE	
	10	DY4-2713-000 000	C	1	BRAKE, S	
	10	DY4-2714-000 000	C	1	BRAKE, T	
	12	DY4-2715-000 000	C	1	BRAKE, UL	
	10	DY4-2716-000 000	C	1	ARM, STOPPER	
	10	DY4-2717-000 000	C	1	ARM, ADJUST	
	12	DY4-2719-000 000	E	1	BELT(S), TIMING	
	8	DY4-2720-000 000	C	1	DAMPER, OIL	
	8	DY4-2721-000 000	C	1	GUARD, GUIDE	
	10	DY4-2722-000 000	C	2	HOLDER, SENSOR	
	10	DY4-2723-000 000	C	1	STOPPER, RK	
	10	DY4-2724-000 000	C	1	SPRING, COIL	
	10	DY4-2725-000 000	C	1	PLATE, SWITCH	
	8	DY4-2726-000 000	C	1	CAPSTAN MOTOR	
	8,10	DY4-2727-000 000	F	9	SCREW, CROSS-RECESS	
	8,10,12	DY4-2728-000 000	F	7	SCREW, CROSS-RECESS	
	8	DY4-2729-000 000	C	2	TAPE	
	8	DY4-2730-000 000	F	5	SCREW, CROSS-RECESS	
	12	DY4-2742-000 000	C	1	GEAR	
	12	DY4-2743-000 000	C	1	GEAR	
	8	DY4-2910-000 000	C	1	ROLLER ASS'Y	
	8	DY4-2911-000 000	C	1	LODING MOTOR ASS'Y	
	10	DY4-2912-000 000	C	1	ARM, PINCH	
	10	DY4-2914-000 000	C	1	STOPPER	
	12	DY4-2915-000 000	C	1	GEAR, RC	
	10	DY4-2917-000 000	C	1	LEVER, SWITCH	
	12	DY4-2918-000 000	C	1	GEAR, RK	
	12	DY4-2919-000 000	C	1	WORM ASS'Y	
	8	DY4-2920-000 000	C	1	CONNECTOR 13P	
	10	DY4-2921-000 000	C	1	SWITCH, SLIDE	
	12	DY4-2922-000 000	C	1	PULLY, RELAY B	
	12	DY4-2923-000 000	C	1	BELT(L), TIMING	
	12	DY4-2924-000 000	C	1	GEAR, WHEEL	
	8	DY4-2925-000 000	C	1	HOLDER	
	8	DY4-2930-000 000	E	1	DRUM ASS'Y	
	8	DY4-2931-000 000	E	1	UPPER DRUM ASS'Y	
	8	DY4-2932-000 000	C	1	HEAD AMP ASS'Y	
⚠		VC5-9520-102 000	D	1	CAPACITOR, CERA. 1000pF/1KV	
		VC5-9700-300 000	C	1	CAPACITOR, TRIMMER 30pF	
⚠		VC5-9850-332 000	D	1	CAPACITOR, FILM 3300pF/100V	
		VC6-0340-100 000	C	1	CAPACITOR, TRIMMER 10pF	
		VC6-0340-200 000	C	2	CAPACITOR, TRIMMER 20pF	
		VC6-0340-300 000	C	3	CAPACITOR, TRIMMER 30pF	
⚠		VC6-1570-152 000	D	1	CAPACITOR, CERA. 1500pF/500V	
⚠		VR5-4640-205 000	D	1	RESISTOR, VARIABLE 2MΩ	
⚠		VR5-4640-504 000	D	1	RESISTOR, VARIABLE 500KΩ	
		VR5-7680-201 000	C	1	RESISTOR, VARIABLE 200Ω	
		VR5-7680-503 000	C	2	RESISTOR, VARIABLE 50KΩ	
		VR5-7780-101 000	C	1	RESISTOR, VARIABLE 100Ω	
		VR5-7780-102 000	C	2	RESISTOR, VARIABLE 1KΩ	
		VR5-7780-103 000	C	9	RESISTOR, VARIABLE 10KΩ	
		VR5-7780-104 000	C	2	RESISTOR, VARIABLE 100KΩ	
		VR5-7780-223 000	C	4	RESISTOR, VARIABLE 22KΩ	
		VR5-7780-471 000	C	1	RESISTOR, VARIABLE 470Ω	
		VR5-7780-472 000	C	13	RESISTOR, VARIABLE 4.7KΩ	
		VR5-7780-473 000	C	3	RESISTOR, VARIABLE 47KΩ	
		VR7-0670-103 000	C	2	RESISTOR, VARIABLE 10KΩ	
		VR7-0670-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
		VS1-0875-011 000	C	1	CONNECTOR 11P	

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
	VS1-0875-022 000	C	1	CONNECTOR 22P	
	VS1-1020-006 000	C	1	CONNECTOR 6P	
	VS1-1169-005 000	C	1	CONNECTOR 5P	
	VS1-1169-013 000	C	1	CONNECTOR 13P	
	VS1-1169-015 000	C	1	CONNECTOR 15P	
	VS1-1169-025 000	C	2	CONNECTOR 25P	
	VS1-5106-012 000	C	1	CONNECTOR 12P	
	VS1-5106-016 000	C	2	CONNECTOR 16P	
	VS1-5106-018 000	C	1	CONNECTOR 18P	
	VS1-5106-020 000	C	1	CONNECTOR 20P	
	VS1-5108-012 000	C	1	CONNECTOR 12P	
	VS1-5108-016 000	C	2	CONNECTOR 16P	
	VS1-5108-020 000	C	1	CONNECTOR 20P	
	VS1-5127-024 000	C	2	CONNECTOR 24P	
	VS1-5149-005 000	C	1	CONNECTOR 5P	
	VS1-5149-010 000	C	1	CONNECTOR 10P	
	VS1-5149-013 000	C	2	CONNECTOR 13P	
	VS1-5149-027 000	C	2	CONNECTOR 27P	
	VS1-5172-018 000	C	1	CONNECTOR 18P	
	WA1-0380-000 000	B	3	DIODE MA157	
	WA1-0384-000 000	B	1	ZENER DIODE RD5.6MB2	
	WA1-0604-000 000	B	2	DIODE MA159	
	WA1-0617-000 000	B	1	DIODE MA3100	
	WA1-0962-000 000	B	1	DIODE MA121	
	WA1-0989-000 000	B	2	DIODE MA3100W	
	WA1-1084-000 000	B	25	DIODE MA110	
	WA1-1123-000 000	B	1	DIODE AG01Z	
⚠	WA1-1124-000 000	D	1	DIODE SHV02	
	WA1-1146-000 000	B	3	DIODE MA707	
	WA1-1153-000 000	B	2	DIODE DA204U	
	WA1-1164-000 000	B	5	DIODE DAN202U	
	WA1-1194-000 000	B	1	DIODE MA728	
	WA1-1203-000 000	B	1	DIODE MA141WA	
	WA1-1226-000 000	B	7	DIODE MA141WK	
	WA1-5061-000 000	B	3	DIODE DAP202U	
	WA1-5080-000 000	B	2	DIODE EC10QS03	
	WA1-5091-000 000	B	2	VARIABLE CAPACITANCE DIODE 1SV205	
	WA2-0052-000 000	B	3	TRANSISTOR 2SC1621	
	WA2-0393-000 201	B	2	TRANSISTOR 2SA1162	
	WA2-0646-000 000	B	10	TRANSISTOR 2SD1328	
	WA2-0735-000 201	B	2	TRANSISTOR 2SC2712	
	WA2-0797-000 201	B	1	TRANSISTOR 2SA1213	
	WA2-0839-000 000	B	1	TRANSISTOR 2SA1226	
	WA2-1099-000 000	B	2	TRANSISTOR FMW1	
	WA2-1172-000 000	B	3	TRANSISTOR 2SA1461	
	WA2-1198-000 000	B	3	TRANSISTOR IMD2	
	WA2-1228-000 000	B	6	TRANSISTOR IMT2	
	WA2-1230-000 000	B	5	TRANSISTOR IMH6	
	WA2-1231-000 000	B	10	TRANSISTOR IMH8	
	WA2-1232-000 000	B	12	TRANSISTOR IMZ1	
	WA2-1234-000 000	B	23	TRANSISTOR IMX2	
	WA2-1237-000 000	B	1	TRANSISTOR DTA144TK	
	WA2-1256-000 000	B	4	TRANSISTOR IMH5	
	WA2-1297-000 000	B	1	TRANSISTOR IMB7	
	WA2-1337-000 000	B	30	TRANSISTOR 2SC4081	
	WA2-1351-000 000	B	2	TRANSISTOR IMD6	
	WA2-1377-000 000	B	2	TRANSISTOR DTC143EU	
	WA2-1378-000 000	B	27	TRANSISTOR DTC144EU	
	WA2-1400-000 000	B	14	TRANSISTOR 2SA1576	
	WA2-1405-000 000	B	2	TRANSISTOR DTA124EU	

PARTS LIST

	PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
		WA2-1407-000 000	B	1	TRANSISTOR DTC114TU	
		WA2-1416-000 000	B	3	TRANSISTOR IMX5	
		WA2-1437-000 000	B	1	TRANSISTOR 2SB1121(S,T)	
		WA2-1498-000 000	B	1	TRANSISTOR 2SA1162	
		WA2-1501-000 000	B	1	FET 2SK5198	
		WA2-5051-000 000	B	12	TRANSISTOR DTA144EU	
		WA2-5062-000 000	B	3	TRANSISTOR DTC144TU	
		WA2-5088-000 000	B	1	TRANSISTOR DTC114EU	
		WA2-5092-000 000	B	3	TRANSISTOR IMX5	
		WA2-5105-000 000	B	1	TRANSISTOR DTA144TU	
		WA2-5122-000 000	B	1	TRANSISTOR FC101	
		WA2-5131-000 000	B	1	TRANSISTOR RU201	
		WA2-5148-000 000	B	1	TRANSISTOR DTA144WU	
		WA2-5149-000 000	B	1	TRANSISTOR 2SB1412F5	
⚠		WA2-5151-000 000	D	1	TRANSISTOR 2SD968A-S	
		WA2-5152-000 000	B	5	TRANSISTOR 2SB1424	
		WA2-5168-000 000	B	2	FET 2SK879 (Y,GR)	
		WA2-5169-000 000	B	2	FET 2SK880 (GR,BL)	
		WA2-5226-000 000	B	1	TRANSISTOR IMB11	
		WA2-5227-000 000	B	1	TRANSISTOR IMH11	
		WA3-1248-000 000	B	1	IC TC4066BF	
		WA3-3175-000 000	B	1	IC BU4066BF	
		WA3-3358-000 000	B	1	IC MC74HC4053F	
		WA3-3564-000 000	B	1	IC TC7S04	
		WA3-3938-000 000	B	1	IC SC14S81F	
		WA3-4150-000 000	B	1	IC BU4011BF	
		WA3-5122-000 000	B	1	IC SC7S32FEL	
		WA3-5173-000 000	B	1	IC SC7S00FEL	
		WA3-5362-000 000	B	1	IC MN3107CS	
		WA3-5392-000 000	B	1	IC S-2917IF01	
		WA3-5638-000 000	B	1	IC SC7S02F	
		WA3-6024-000 000	B	1	IC MB8464A-15LL	
		WA4-0266-000 000	B	2	IC NJM4558M	
		WA4-0349-000 201	B	2	IC NJM2904M	
		WA4-0363-000 000	B	1	IC NJM4556MB	
		WA4-0458-000 000	B	1	IC NJM3414M	
		WA4-0509-000 000	B	1	IC NJM2043M	
		WA4-0901-000 000	B	1	IC AN2011S	
		WA4-1248-000 000	B	3	IC μPC324G2	
		WA4-1292-000 000	B	1	IC LVA522F-2	
		WA4-1293-000 000	B	1	IC PST529CMT	
		WA4-1322-000 000	B	1	IC AN2514S	
		WA4-5125-000 000	B	1	IC NJM311M	
		WA4-5127-000 000	B	1	IC CXA8006M	
		WA4-5129-000 000	B	1	IC S-87050AF	
		WA4-5141-000 000	B	2	IC MM1036XFF	
		WA4-5161-000 000	B	1	IC CXA1512M	
		WA8-0195-000 000	C	1	THERMISTER	
		WE2-0414-000 000	C	1	FILTER, NOISE	
		WG1-0427-000 000	B	1	LED LT1D51A	
	2	XA1-6200-409 000	F	2	SCREW, CROSS-RECESS, PH	
	2,4,6	XA1-7200-307 000	F	14	SCREW, CROSS-RECESS, PH	
	4	XA4-2170-707 000	F	1	SCREW, CROSS-RECESS	
	4	XA4-4170-407 000	F	1	SCREW, CROSS-RECESS, PH	
	4	XA4-4170-457 000	F	1	SCREW, CROSS-RECESS, PH	
	4	XA4-4200-507 000	F	1	SCREW, CROSS-RECESS, PH	
	4	XA4-7200-359 000	F	2	SCREW, CROSS-RECESS, PH	
	2,4,6	XA4-7200-459 000	F	23	SCREW, CROSS-RECESS, PH	
	4	XA4-7200-609 000	F	4	SCREW, CROSS-RECESS	
	4	XA4-9170-557 000	F	3	SCREW, CROSS-RECESS, PH	

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
4	XA4-9170-609 000	F	1	SCREW, CROSS-RECESS, PH	
4	XA4-9200-709 000	F	5	SCREW, CROSS-RECESS, PH	
2	XA4-9260-709 000	F	4	SCREW, CROSS-RECESS, PH	
2	XA9-0435-000 000	F	2	SCREW, CROSS-RECESS, PH	
2	XA9-0449-000 000	F	2	SCREW, CROSS-RECESS	
2	XA9-0503-000 000	F	3	SCREW, CROSS-RECESS, PH	
14	XB4-6201-609 000	F	2	SCREW, CROSS-RECESS	
4	XB4-6260-607 000	F	1	SCREW M2.6X6	
4	X96-1723-500 000	F	1	SCREW	
4	X96-1723-610 000	F	2	SCREW, SLOTTED, SHOULDER	
4	YA1-0061-000 000	C	1	HOLDER, LITHIUM BATTERY	
4	YA1-0064-000 000	B	1	SHEET, ZOOM	
4	YF1-0004-000 000	C	1	BLIND, IG METER (A)	
4	YG9-5021-000 000	C	1	PHOTO REFRECTOR C.B.A.	
4	YG9-5022-000 000	C	1	AF MOTOR ASS'Y	
4	YG9-5023-000 000	C	1	PZ MOTOR ASS'Y	
4	YH8-0002-000 000	C	1	IG METER	
10	Y22-8012-000 000	B	1	LED GL452S	
8	Y22-8120-000 000	B	1	SENSOR, DEW	
10	Y22-8121-000 000	B	2	PHOTO IC SPI-315-25-CD	
10	Y22-8123-000 000	B	2	PHOTO TRANSISTOR EE-P109	

CONTENTS

CHAPTER IV. DIAGRAMS

1. Interconnection Diagram ..... Ⅳ－1

2. Block Diagrams
2-1 AUTO FOCUS/DIGITAL MEMORY SECTION ..... Ⅳ－2
2-2 CAMERA-KEY SECTION ..... Ⅳ－3

3. Circuit Board/Schematic Diagrams
3-1 AUTO FOCAS C.B.A. ..... Ⅳ－4, 5
3-2 CAMERA-KEY C.B.A. ..... Ⅳ－6, 7

< Guide to diagrams >

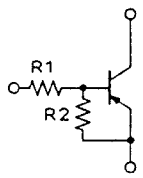
1. Color coding

(1) Single lines in block diagrams
Red (———) : ES
(– – – –) : CU

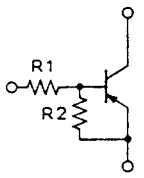
(2) Signal lines in circuit diagram
Red : Powder supply line
Blue (———) : ES
Blue (– – – –) : CU

(3) PC board layout
Orange : Component side
Hatched black (▒▒▒▒▒) : Soldering side
Black : Parts on component side
Blue : Parts on soldering side

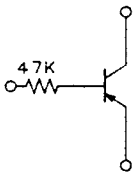
2. Equivalent circuits of digital transistor



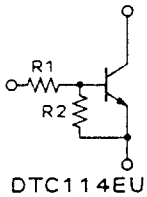
DTA124EU
R1, R2 : 22K
DTA144EK
R1, R2 : 47K



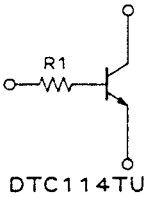
DTA144EU
R1, R2 : 47K
DTA114TK
R1, R2 : 10K



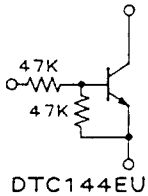
DTA144TU



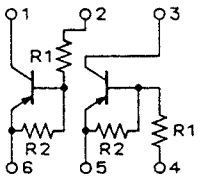
DTC114EU
R1, R2 : 10K
DTC143EU
R1, R2 : 4.7K



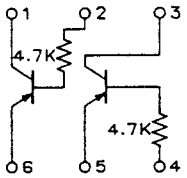
DTC114TU
R1 : 10K
DTC144TU
R1 : 47K



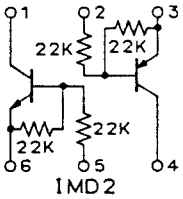
DTC144EU



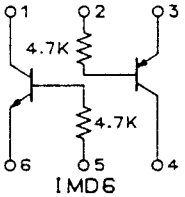
IMB5
R1, R2 : 22K
IMB6
R1, R2 : 47K



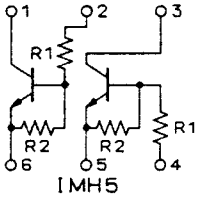
IMB7



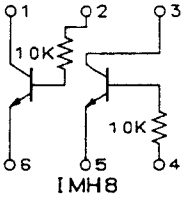
IMD2



IMD6



IMH5
R1, R2 : 22K
IMH6
R1, R2 : 47K



IMH8

3. Indications in circuit diagram

- Resistance is represented in ohms (Ω).
- Capacitance is represented in farads (F).
- Wattage of resistor is 1/16 W unless otherwise specified.
- Voltages are measured with a digital voltmeter.
- Waveform photographs are taken by using a 10:1 probe.
- IC Nos. in C.B.A.s are listed on the bottom of diagrams.
- Nos. colored in blue correspond to the Nos. of waveform photographs.
- Voltage values indicated in circuit diagram are based on the following condition.
- Colorbar, standard angle of view, AWB-preset

INTERCONNECTION DIAGRAM

AUDIO–VIDEO C.B.A.	
CN201	
1	A–FADE Ⓗ
2	AUDIO I/O
3	AUDIO L OUT
4	GND
5	AUDIO R OUT
6	TH Ⓗ /DL Ⓛ
7	PHONE L
8	GND
9	PHONE R
10	A–MUTE Ⓗ
11	GND
12	PB Y
13	PB C
14	NC
15	REC Y
16	VIDEO 5V
17	REC C
18	LINE Ⓗ /CAMERA Ⓛ
CN202	
1	NC
2	FE ON Ⓛ
3	NC
4	ME Ⓗ /MP Ⓛ
5	NC
6	NC
7	SW PULSE
8	NC
9	NC
10	NC
11	NC
12	REC Ⓛ
13	NC
14	NC
15	REC RF
16	PB RF
17	NC
18	NC
19	AV5V
20	NC
21	NC
22	GND
CN203	
1	EVF VIDEO
2	GND
3	CHARACTER 2
4	V–MUTE Ⓗ
CN204	
1	CHARACTER 2
2	HIMP Ⓗ
3	PB RF (AGC)
4	V–MUTE Ⓗ
5	NC
6	NC
7	HI8 Ⓗ /NORMAL Ⓛ
8	PB RF
9	SP Ⓗ /LP Ⓛ
10	PB Ⓗ /EE Ⓛ
11	ME Ⓗ /MP Ⓛ
12	VIDEO–CS Ⓗ
13	S–DATA IN
14	S–CLOCK
15	JOG Ⓗ
16	JOG VD
17	SS·AV ON Ⓛ
18	REC ATF
19	SW PULSE
20	FE ON Ⓛ
21	NC
22	REC Ⓛ
23	AUDIO ON Ⓗ
24	C–SYNC
CN205	
1	UNREG 6V
2	GND
CN801	
1	L ch
2	GND
3	R ch
4	L–BIAS
5	R–BIAS
6	AUDIO 5V

REMOTE CONTROL C.B.A.	
CN071	
1	TALLY
2	AV 5V
3	GND
4	REMOCON DATA
5	SS5V

SYSCON–SERVO C.B.A.	
CN501	
1	UNREG 6V
2	GND
CN502	
1	GND
2	POWER SW Ⓛ
3	EJECT SW Ⓛ
4	POWER LED Ⓛ
5	KEY OUT 2
6	KEY OUT 1
7	KEY OUT 0
8	KEY IN 3
9	KEY IN 2
10	KEY IN 1
11	KEY IN 0
12	KEY OUT 3
13	SS5V
14	BOT SENS. Ⓗ
15	T–REEL FG
16	T–REEL LED (–)
17	TAPE SENS. LED
18	SAFETY TAB Ⓗ
19	HIMP Ⓛ
20	MP Ⓗ /ME Ⓛ
21	S–REEL LED (–)
22	S–REEL FG
23	MODE SW 2
24	MODE SW 1
25	MODE SW 0
26	EOT SENS. Ⓗ
27	CASSETTE DOWN Ⓛ
CN504	
1	GND
2	LITHIUM 3V
CN505	
1	TRIG. SW Ⓛ
2	TELE SW Ⓛ
3	WIDE SW Ⓛ
4	BATT. LEVEL
5	SS·AV ON Ⓛ
CN506	
1	GND
2	BACK UP
3	SS5V
4	RESET Ⓛ
5	CK–REQUEST Ⓛ
6	CK–CS Ⓛ
7	S–CLOCK
8	S–DATA IN
9	S–DATA OUT
CN507	
1	TALLY
2	VIDEO 5V
3	GND
4	REMOCON DATA
5	SS5V
CN508	
1	GND
2	SS5V
3	C–FG1
4	C–FG2
5	W
6	U
7	GND
8	V+
9	V–
10	H+
11	U+
12	U–
13	V
14	W+
15	W–
CN509	
1	U
2	V
3	W
4	COM
5	GND
6	FG COM
7	D–FG
8	PG COM
9	D–PG
10	GND
CN510	
1	SS5V
2	DEW Ⓗ
3	GND
4	L. MOTOR (–)
5	L. MOTOR (+)

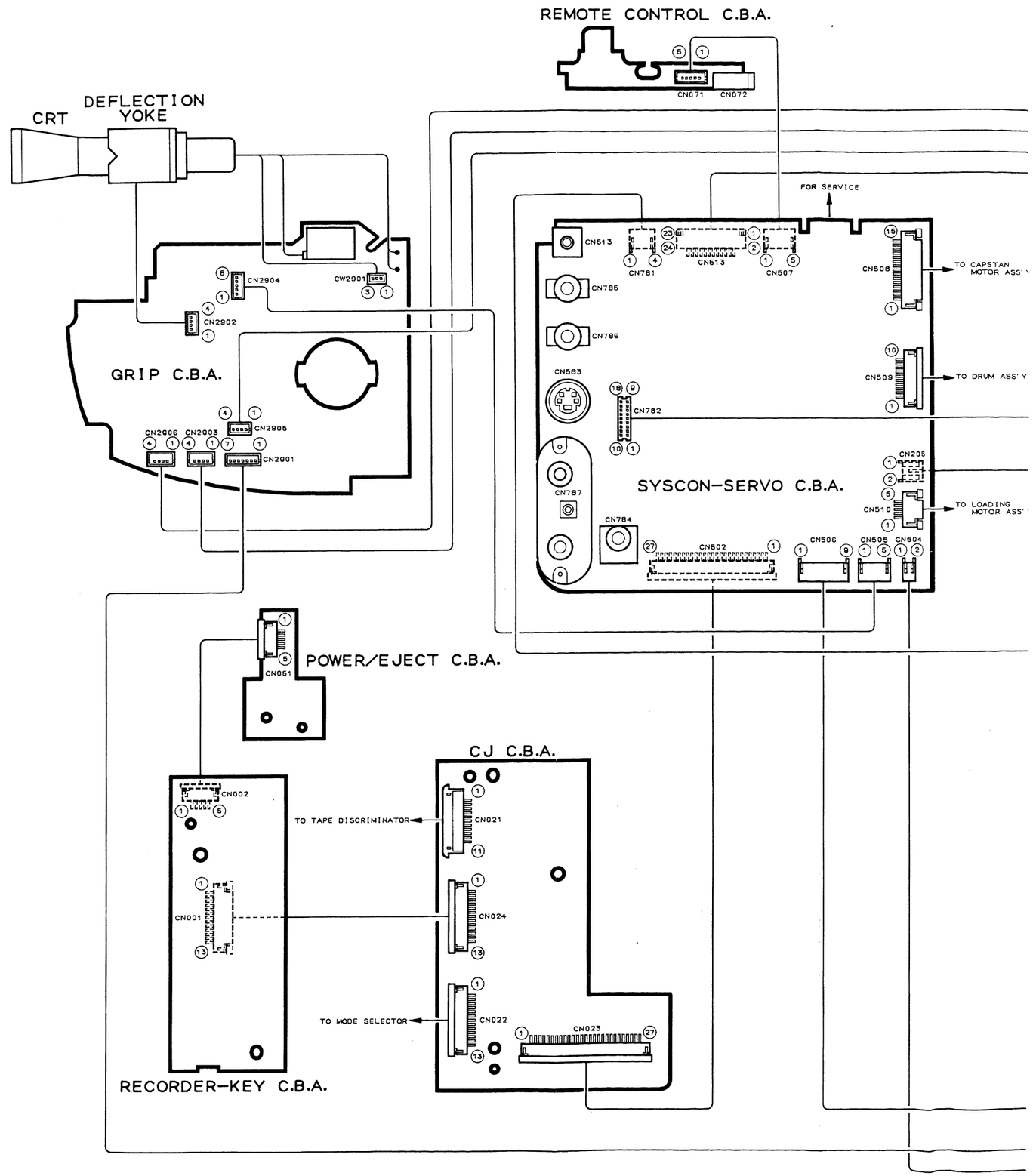
SYSCON–SERVO C.B.A.	
CN513	
1	C–SYNC
2	AUDIO ON Ⓛ
3	REC Ⓛ
4	NC
5	FE ON Ⓛ
6	SW PULSE
7	REC ATF
8	SS·AV ON Ⓛ
9	JOG VD
10	JOG Ⓗ
11	S–CLOCK
12	S–DATA IN
13	VIDEO–CS Ⓗ
14	ME Ⓗ /MP Ⓛ
15	PB Ⓗ /EE Ⓛ
16	SP Ⓗ /LP Ⓛ
17	PB RF
18	HI8 Ⓗ /NORMAL Ⓛ
19	NC
20	NC
21	V–MUTE Ⓗ
22	PB RF (AGC)
23	HIMP Ⓗ
24	CHARACTER 2
CN781	
1	CAMERA (C)
2	GND
3	CAMERA (Y)
4	A–FADE Ⓗ
CN782	
1	A–FADE Ⓗ
2	AUDIO OUT
3	AUDIO L OUT
4	GND
5	AUDIO R OUT
6	TH Ⓗ /DL Ⓛ
7	PHONE L
8	GND
9	PHONE R
10	A–MUTE Ⓗ
11	GND
12	PB Y
13	PB C
14	NC
15	REC Y
16	VIDEO 5V
17	REC C
18	LINE Ⓗ /CAMERA Ⓛ
CE501	
1	VIDEO OUT
2	S C OUT
3	S Y OUT
4	NC
5	GND
6	AUDIO L OUT
7	AUDIO R OUT
8	AUDIO OUT
9	LINE Ⓗ /CAMERA Ⓛ
10	SW PULSE
11	PB RF
12	ATF BIAS
13	GND
14	POWER SW Ⓛ

POWER/EJECT C.B.A.	
CN051	
1	SS 5V
2	POWER LED Ⓛ
3	POWER SW Ⓛ
4	GND
5	EJECT SW Ⓛ

RECORDER–KEY C.B.A.	
CN001	
1	SS 5V
2	GND
3	POWER SW Ⓛ
4	EJECT SW Ⓛ
5	POWER LED Ⓛ
6	KEY OUT 2
7	KEY OUT 1
8	KEY OUT 0
9	KET IN 3
10	KEY IN 2
11	KEY IN 1
12	KEY IN 0
13	KEY OUT 3

CJ C.B.A.	
CN021	
1	SS 5V
2	ME Ⓗ /MP Ⓛ
3	HIMP Ⓛ
4	SAFETY TAB Ⓗ
5	TAPE SENS. LED (–)
6	TAPE SENS. LED (+)
7	BOT SENS. Ⓗ
8	T–REEL LED (+)
9	T–REEL FG
10	SS 5V
11	T–REEL LED (–)
CN022	
1	S–REEL LED (–)
2	SS 5V
3	S–REEL FG
4	MODE SW 2
5	MODE SW 1
6	MODE SW 0
7	GND
8	CASSETTE DOWN Ⓛ
9	SS 5V
10	EOT SENS. Ⓗ
11	NC
12	SS 5V
13	NC
CN023	
1	CASSETTE DOWN Ⓛ
2	EOT SENS. Ⓗ
3	MODE SW 0
4	MODE SW 1
5	MODE SW 2
6	S–REEL FG
7	S–REEL LED (–)
8	MP Ⓗ /ME Ⓛ
9	HIMP Ⓛ
10	SAFETY TAB Ⓗ
11	TAPE SENS. LED
12	T–REEL LED (–)
13	T–REEL FG
14	BOT SENS. Ⓗ
15	SS5V
16	KEY OUT 3
17	KEY IN 0
18	KEY IN 1
19	KEY IN 2
20	KEY IN 3
21	KEY OUT 0
22	KEY OUT 1
23	KEY OUT 2
24	POWER LED Ⓛ
25	EJECT SW Ⓛ
26	POWER SW Ⓛ
27	GND
CN024	
1	SS 5V
2	GND
3	POWER SW Ⓛ
4	EJECT SW Ⓛ
5	POWER LED Ⓛ
6	KEY OUT 2
7	KEY OUT 1
8	KEY OUT 0
9	KET IN 3
10	KEY IN 2
11	KEY IN 1
12	KEY IN 0
13	KEY OUT 3

GRIP C.B.A.	
CN2901	
1	GND
2	FOCUS FRAME
3	CHARACTER 1
4	CG–CS Ⓗ
5	S–CLOCK
6	S–DATA IN
7	CG–STROBE Ⓗ
CN2902	
1	H+
2	H–
3	V+
4	V–
CN2903	
1	UNREG 6V
2	GND
3	UNREG 6V
4	GND
CN2904	
1	TRIG.SW Ⓛ
2	TELE SW Ⓛ
3	WIDE SW Ⓛ
4	BATT. LEVEL
5	SS·AV ON Ⓛ
CN2905	
1	EVF VIDEO
2	GND
3	CHARACTER 2
4	V–MUTE Ⓗ
CN2906	
1	UNREG 6V
2	GND
3	UNREG 6V
4	GND
CW2901	
1	H.V
3	K
4	G3
5	G1
6	G2
7	H



01 May. 1991

REMOTE CONTROL C.B.A.

CN071 CN072

CTION
KE

P C.B.A.

CN2904 CW2901 CN2902 CN2906 CN2903 CN2905 CN2901

FOR SERVICE

CN513 CN781 CN613 CN507 CN508 TO CAPSTAN MOTOR ASS'Y

CN785 CN786 CN583 CN509 TO DRUM ASS'Y CN782

SYSCON-SERVO C.B.A.

CN787 CN784 CN205 CN510 TO LOADING MOTOR ASS'Y CN602 CN506 CN505 CN504

CN203 CN204 CN202

JOG C.B.A.

CN201

AUDIO-VIDEO C.B.A.

CN205 CN801

TO DRUM ASS'Y

HEAD AMP

STEREO MICHROPHONE

JC081 CW081

MIC JACK C.B.A.

DC/DC CONVERTER

POWER/EJECT C.B.A.

CN051

CJ C.B.A.

CN002 TO TAPE DISCRIMINATOR CN021 CN001 CN024 TO MODE SELECTOR CN022 CN023

CORDER-KEY C.B.A.

CN2803 CN2801 CN2804 CN2811 CN2805 CN2802 CN2809 CN2810 CN2806 CN2808 CN2807

AUTO FOCUS C.B.A.

CN2201 CN2202 CN2203 CN2204

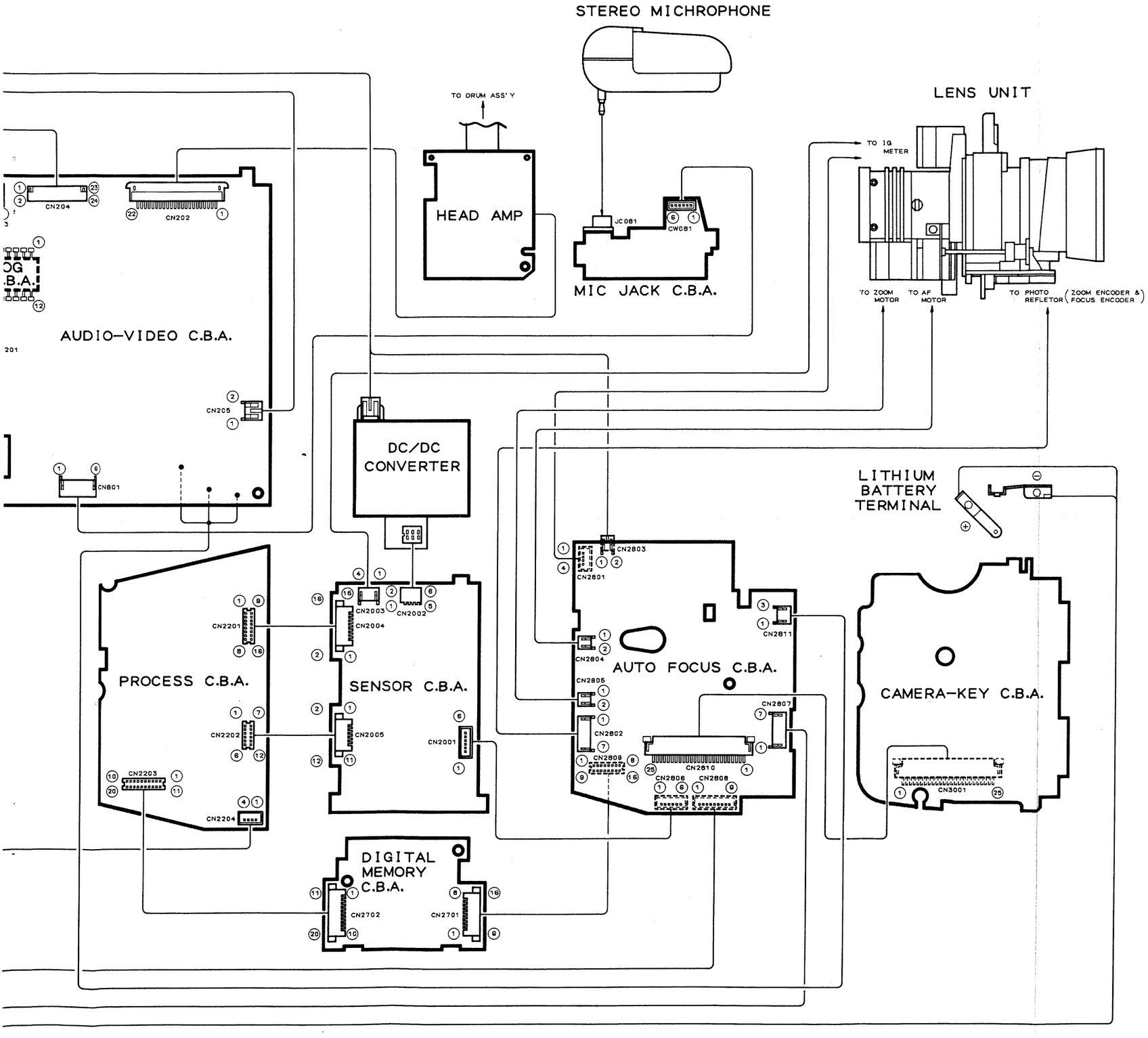
PROCESS C.B.A.

CN2003 CN2002 CN2004 CN2005 CN2001

SENSOR C.B.A.

DIGITAL MEMORY C.B.A.

CN2702 CN2701



DIGITAL MEMORY C.B.A.	
CN2701	
1	GND
2	DM BLK
3	Y (PRO OUT)
4	SEE THROUGH CONT.
5	TITLE B
6	TITLE R
7	TITLE Y/C
8	CAMERA 5V
9	HD
10	NC
11	VD
12	FADE (H)
13	F AWB (H) /LOCK (L)
14	SAMPLE FADE (H)
15	Y (AF)
16	RESET (L)
CN2702	
1	GND
2	NC
3	Y (AF)
4	RESET (L)
5	F AWB (H) /LOCK (L)
6	SAMPLE FADE (H)
7	CAMERA 5V
8	FADE (H)
9	VD
10	CP2
11	GND
12	HD
13	Y (DM OUT)
14	DM BLK
15	R-Y (PRO OUT)
16	Y (PRO OUT)
17	V REF.
18	B-Y (PRO OUT)
19	B-Y (DM OUT)
20	R-Y (DM OUT)

PROCESS C.B.A.	
CN2201	
1	C-
2	CAMERA 5V
3	D+
4	C+
5	W BLK
6	Y0H
7	Y1H
8	C0H
9	GND
10	S/H OUT
11	C1H
12	CP0B
13	FH/2
14	CP2+P BLK
15	CSP 1
16	CSP 2
CN2202	
1	C BLK
2	PLL
3	WHD
4	CP2
5	SYNC
6	BF
7	SC (90)
8	CP2+C BLK
9	SC
10	GND
11	HD
12	VD
CN2203	
1	GND
2	Y (SAMPLE)
3	Y (AF)
4	RESET (L)
5	F AWB (H) /LOCK (L)
6	SAMPLE FADE (H)
7	CAMERA 5V
8	FADE (H)
9	VD
10	CP2
11	GND
12	HD
13	Y (DM OUT)
14	DM BLK
15	R-Y (PRO OUT)
16	Y (PRO OUT)
17	+1.8V
18	B-Y (PRO OUT)
19	B-Y (DM OUT)
20	R-Y (DM OUT)
CN2204	
1	C OUT
2	GND
3	Y OUT
4	AUDIO FADE

AUTO FOCUS C.B.A.	
CN2801	
1	OUT (+)
2	IN (-)
3	OUT (-)
4	IN (+)
CN2802	
1	LED CONT.
2	LED 5V
3	FOCUS 1
4	FOCUS 0
5	ZOOM 2
6	ZOOM 1
7	ZOOM 0
CN2803	
1	UNREG 6V.
2	GND
CN2804	
1	TELE (H)
2	WIDE (H)
CN2805	
1	AF FAR
2	AF NEAR
CN2806	
1	GND
2	CAMERA 5V
3	CAMERA ON (L)
4	SHUTTER SPEED 1
5	SHUTTER SPEED 2
6	SHUTTER SPEED 3
CN2807	
1	GND
2	FOCUS FRAME
3	NC
4	CG-CS (H)
5	S-CLOCK
6	S-DATA OUT
7	CG-STROBE (H)
CN2808	
1	GND
2	BACK UP
3	SS5V
4	RESET (L)
5	CK-REQUEST (L)
6	CK-CS (L)
7	S-CLOCK
8	S-DATA OUT
9	S-DATA IN
CN2809	
1	GND
2	DM BLK
3	Y (PRO OUT)
4	SEE THROUGH CONT.
5	TITLE B
6	TITLE R
7	TITLE Y/C
8	CAMERA 5V
9	HD
10	GND
11	VD
12	FADE (H)
13	F AWB (H) /LOCK (L)
14	SAMPLE FADE (H)
15	Y (AF)
16	RESET (L)
CN2810	
1	GND
2	BACK UP
3	CAMERA 5V
4	RAM-CS (H)
5	CI-REQUEST (L)
6	CI-CS (H)
7	S-CLOCK
8	S-DATA OUT
9	S-DATA IN
10	Y (A/D)
11	SAMPLE LEVEL
12	CHARACTER 1
13	TITLE Y/C
14	TITLE R
15	TITLE B
16	GND
17	VD
18	HD
19	RESET (L)
20	KEY 0
21	KEY 1
22	DM BLK
23	GND
24	MUSIC
25	MIC OFF
CN2811	
1	GND
2	MUSIC
3	MIC OFF

SENSOR C.B.A.	
CN2001	
1	GND
2	CAMERA 5V
3	CAMERA ON (L)
4	SHUTTER SPEED 1
5	SHUTTER SPEED 2
6	SHUTTER SPEED 3
CN2002	
1	9V
2	CAMERA 5V
3	15V
4	GND
5	-8V
6	CAMERA ON (L)
CN2003	
1	D+
2	C+
3	D-
4	C-
CN2004	
1	C-
2	CAMERA 5V
3	D+
4	C+
5	W BLK
6	Y0H
7	Y1H
8	C0H
9	GND
10	S/H OUT
11	C1H
12	CP0B
13	FH/2
14	CP2+P BLK
15	CSP 1
16	CSP 2
CN2005	
1	C BLK
2	PLL
3	WHD
4	CP2
5	SYNC
6	BF
7	SC (90)
8	CP2+C BLK
9	SC
10	GND
11	HD
12	VD

MIC JACK C.B.A.	
CW081	
1	L ch
2	GND
3	R ch
4	L-BIAS
5	R-BIAS
6	AUDIO 5V

CAMERA-KEY C.B.A.	
CN3001	
1	MIC OFF
2	MUSIC
3	GND
4	DM BLK
5	KEY 1
6	KEY 0
7	RESET (L)
8	HD
9	VD
10	GND
11	TITLE B
12	TITLE R
13	TITLE Y/C
14	CHARACTER 1
15	SAMPLE LEVEL
16	Y (DM OUT)
17	S-DATA IN
18	S-DATA OUT
19	S-CLOCK
20	CI-CS (L)
21	CI-REQUEST (L)
22	RAM-CS (H)
23	CAMERA 5V
24	BACK UP
25	GND

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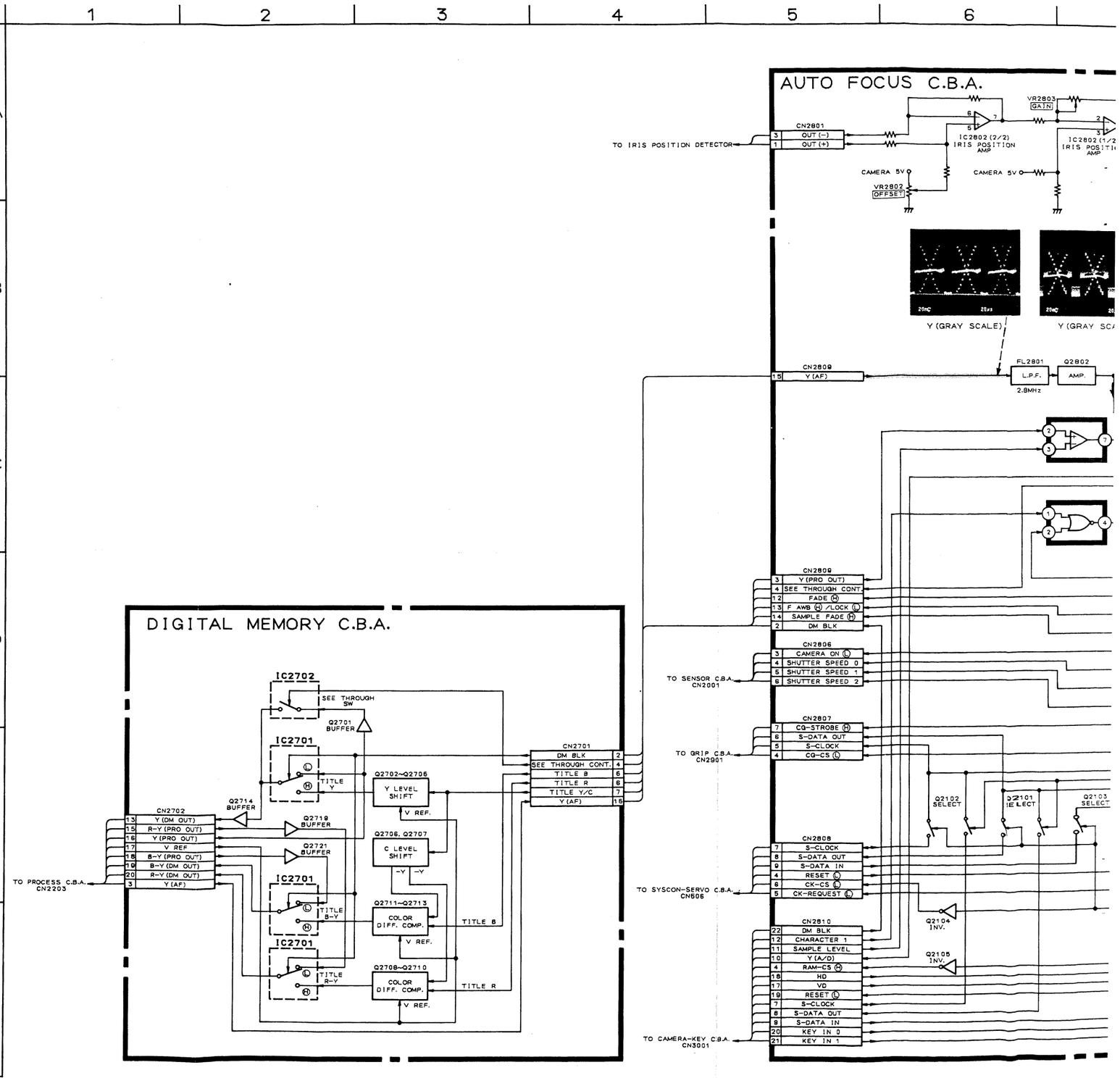
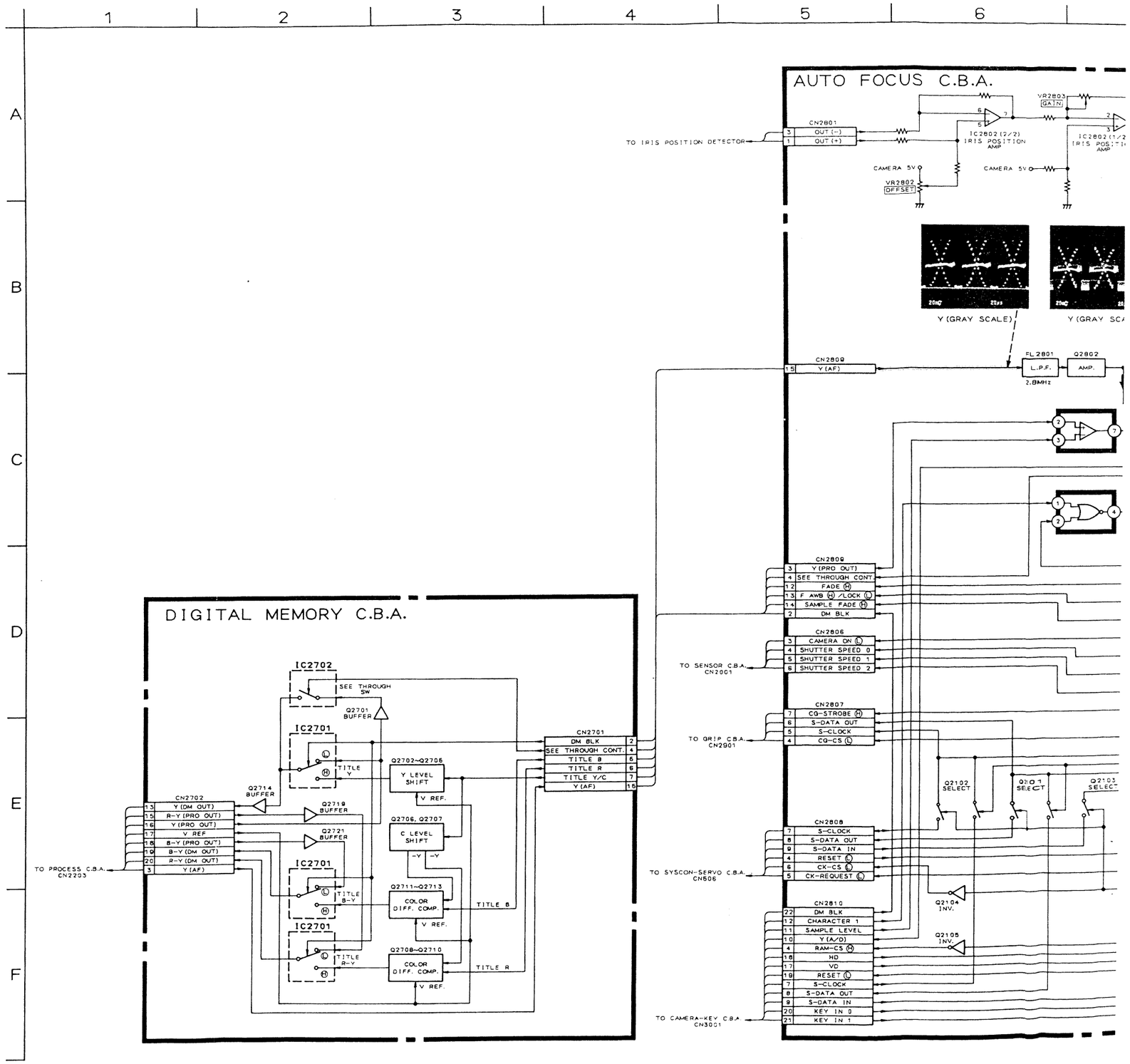
BLOCK DIAGRAM AUTO FOCUS/DIGITAL MEMORY SECTION



BLOCK DIAGRAM AUTO FOCUS/DIGITAL MEMORY SECTION



OCUS/DIGITAL MEMORY SECTION

3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13

oSIGNAL PATH ES SIGNAL CU SIGNAL

AUTO FOCUS C.B.A.

TO IRIS POSITION DETECTOR

CN2801
3 OUT (−)
1 OUT (+)

TP2805 IRIS POSITION

VR2803 GAIN

IC2802(2/2) IRIS POSITION AMP

IC2802(1/2) IRIS POSITION AMP

CAMERA 5V

VR2802 OFFSET

BPF OUT (GRAY SCALE) TRIGGER: IC2801 (10)

HPF OUT (GRAY SCALE)

INV. CLIP (GRAY SCALE)

MIX IN (GRAY SCALE)

180ns DL (GRAY SCALE)

ES (GRAY SCALE IN FOCUS)

ES (LENS CAP)

Y (GRAY SCALE)

Y (GRAY SCALE)

BPF OUT (GRAY SCALE) TRIGGER: IC2801 (10)

CN2809
15 Y (AF)

FL2801 L.P.F. 2.8MHz

Q2802 AMP.

ES

Q2801 (2/2) BUFFER

CU

Q2801 (1/2) BUFFER

TP2801 Y

H.P.F. 2MHz

B.P.F. C2807, R2820 430KHz

B.P.F. C2806, R2816 320KHz

B.P.F. C2810, R2815 320KHz

B.P.F. C2811, R2814

V REF.

IC2151 Y A/D CONV.

IC2151 CHARACTER SEE THROUGH OFF

180nS DL FL2802

180nS DL FL2803

VR2801 ES OFFSET

INV. CLIP

X6

X2

CLIP 180mV

A DIVISION (A/B) B

GATE

PEAK HOLD (H)

PEAK HOLD (V)

SAMPLE HOLD

X(−2)

ABSOL.

SELECT

SP V.CLR

GP CP

REF 3.6V

IC2801 LD5077 ANALOG IC

GP+CP

SP+V.CLR

IC2801 10 PIN

ES PEAK (GRAY SCALE)

CU PEAK (GRAY SCALE)

CU (GRAY SCALE IN FOCUS)

CU (LENS CAP)

BPF OUT (GRAY SCALE) TRIGGER: IC2801 (10)

BPF OUT (GRAY SCALE) TRIGGER: IC2801 (10)

CN2809
3 Y (PRO OUT)
4 SEE THROUGH CONT.
12 FADE (H)
13 F AWB (H) /LOCK (L)
14 SAMPLE FADE (H)
2 DM BLK

CN2806
3 CAMERA ON (L)
4 SHUTTER SPEED 0
5 SHUTTER SPEED 1
6 SHUTTER SPEED 2

TO SENSOR C.B.A. CN2001

CN2807
7 CG-STROBE (H)
6 S-DATA OUT
5 S-CLOCK
4 CG-CS (L)

TO GRIP C.B.A. CN2901

CN2808
7 S-CLOCK
8 S-DATA OUT
9 S-DATA IN
4 RESET (L)
6 CK-CS (L)
5 CK-REQUEST (L)

TO SYSCON-SERVO C.B.A. CN506

CN2810
22 DM BLK
12 CHARACTER 1
11 SAMPLE LEVEL
10 Y (A/D)
4 RAM-CS (H)
16 HD
17 VD
19 RESET (L)
7 S-CLOCK
8 S-DATA OUT
9 S-DATA IN
20 KEY IN 0
21 KEY IN 1

TO CAMERA-KEY C.B.A. CN3001

IC2101 M50727.QFA3 CAMERA KEY MI-COM.

24 SEE THROUGH (H)
22 FADE (H)
38 F AWB (H) /LOCK (L)
23 SAMPLE FADE (H)
25 CAMERA ON (L)
35 SHUTTER SPEED 0
36 SHUTTER SPEED 1
37 SHUTTER SPEED 2
28 CG-STROBE (H)
29 CG-CS (L)
32 S-CLOCK
33 S-DATA OUT
34 S-DATA IN
27 CI-CS (H)
1 RESET (L)
30 CK-REQUEST (L)
31 CK-CS (H)
16 RAM-CS (L)
5 KEY IN 0
6 KEY IN 1
19 WIDE (H)
18 TELE (H)
15 AF MODE 1
14 AF MODE 0

Q2102 SELECT

Q2101 SELECT

Q2103 SELECT

Q2104 INV.

Q2105 INV.

IC2807 LD7056 DIGITAL IC

26 AF GATE PULSE
29 V.CLR
30 SP
31 SEL A
32 SEL B
20 ES PEAK
18 CU PEAK
43 AF FRAME
11 DATA READ
10 DATA WRITE
9 ADDRESS READ
8 AD0
1 AD7
39 SC
37 HD
41 VD

OSC IC2808

VC2801 CLOCK

TP2811 VD

TP2810 HD

CN2701
DM BLK 2
SEE THROUGH CONT. 4
TITLE B 5
TITLE R 6
TITLE Y/C 7
Y (AF) 15

Q2702~Q2706 Y LEVEL SHIFT

V REF.

Q2706, Q2707 C LEVEL SHIFT

−V −V

Q2711~Q2713 COLOR DIFF. COMP.

TITLE B

V REF.

Q2708~Q2710 COLOR DIFF. COMP.

TITLE R

V REF.

8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16

○SIGNAL PATH ES SIGNAL CU SIGNAL

105
SITION

BPF OUT (GRAY SCALE)
TRIGGER: IC2801 (10)

HPF OUT
(GRAY SCALE)

INV. CLIP
(GRAY SCALE)

MIX IN
(GRAY SCALE)

180ns DL
(GRAY SCALE)

ES
(GRAY SCALE IN FOCUS)

ES (LENS CAP)

BPF OUT (GRAY SCALE)
TRIGGER: IC2801 (10)

TP2801
V

H.P.F.
2MHz
C2807, R2820

B.P.F.
430KHz
C2809, R2816

B.P.F.
320KHz
C2810, R2816

B.P.F.
320KHz
C2811, R2814

V REF.

180nS DL FL2802

180nS DL FL2803

VR2801
ES OFFSET

INV. CLIP

×6

×2

CLIP 180mV

DIVISION (A/B)

ABSOL.

SP V.CLR

GP CP

SELECT

GATE

PEAK HOLD (H)

PEAK HOLD (V)

SAMPLE HOLD

×(−2)

REF 3.6V

IC2801
LD5077
ANALOG IC

CU
(GRAY SCALE IN FOCUS)

CU (LENS CAP)

IC2801 (10) PIN

GP+CP

ES PEAK
(GRAY SCALE)

CU PEAK
(GRAY SCALE)

SP+V.CLR

BPF OUT (GRAY SCALE)
TRIGGER: IC2801 (10)

151
CTER
IROUGH
F

SEE THROUGH (H)
FADE (H)
F AWB (H) /LOCK (L)
SAMPLE FADE (H)
CAMERA ON (L)
SHUTTER SPEED 0
SHUTTER SPEED 1
SHUTTER SPEED 2
2Q-STROBE (H)
2Q-CS (L)
S-CLOCK
S-DATA OUT
S-DATA IN
CI-CS (H)

IC2101
M50727.QFA3
CAMERA KEY
MI-COM.

RESET (L)
CK-REQUEST (L)
CK-CS (H)

RAM-CS
KEY IN 0
KEY IN 1
WIDE (H)
TELE (H)
AF MODE 1
AF MODE 0

AF GATE PULSE
V.CLR
SP
SEL A
SEL B

IC2807
LD7056
DIGITAL IC

ES PEAK
CU PEAK

AF FRAME
DATA READ
DATA WRITE
ADDRESS READ
AD0
AD7

SC
HD
VD

OSC
IC2808

VC2801
CLOCK

TP2811
VD

TP2810
HD

IRIS POSITION
AF FRAME ON (H)
ES
CU
DA VREF.
AD VREF.
3.6V

IC2803
M37450M4AF
AF MI-COM.

DATA READ
DATA WRITE
ADDRESS READ
AD0
AD7

AF MODE 0
AF MODE 1
TELE SW (H)
WIDE SW (H)

IC2804
AF FRAME
DISPLAY SW

TP2809
AF FRAME

CN2807
AF FRAME
TO GRIP C.B.A. CN2901

IC2806
AF MOTOR
DRIVER

5S 5V

SPEED CONT.

MOTOR DRIVE

AF FAR
AF NEAR

CN2805
AF FAR
AF NEAR
TO AUTO FOCUS MOTOR

CN2803
UNREG 6V
FROM GRIP C.B.A. CN2906

WIDE (H)
TELE (H)
SPEED REF.

MOTOR DRIVE
SPEED CONT.

CN2804
WIDE (H)
TELE (H)
TO ZOOM MOTOR

IC2805
ZOOM MOTOR
DRIVER

(CAMERA 5V)
Q2804
LED 5V DRIVE

ZOOM 2
ZOOM 1
ZOOM 0
FOCUS 1
FOCUS 0
LED CONT.

CN2802
ZOOM 0
ZOOM 1
ZOOM 2
FOCUS 0
FOCUS 1
LED CONT.
LED 5V
ZOOM LENS POSITION DETECTOR
FOCUS LENS POSITION DETECTOR
ZOOM/FOCUS LENS POSITION DETECTOR

RESET (L)

CN2809
RESET (H)
FROM DIGITAL MEMORY C.B.A. CN2701

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BLOCK DIAGRAM CAMERA-KEY SECTION

CAMERA-KEY C.B.A.

Q3101 (1/2) Q3101 (2/2) Q3102 NOISE FILTER AMP MUSIC LEVEL +5V

Q3103 L.P.F. (8KHz)

Q3104 Q3105 FADE

IC3002 TC4066BF SELECT SW

SW3013 MUSIC ONLY MUSIC LEVEL H MUSIC LEVEL L

SW3012 MUSIC ON/OFF

SW3011 MUSIC SELECT

SW3010 DATA/TIME DISPLAY
SW3009 CHARACTER DISPLAY
SW3008 CHARACTER COLOR
SW3007 DIGITAL DISPLAY
SW3006 DIGITAL COLOR
SW3005 DIGITAL MEMO

SW3004 AWB
SW3003 SHUTTER
SW3002 AF
SW3001 FADE

Q3106 AGC

IC3006 DH4.0394 TITLE MI-COM

S-DATA IN 80
S-DATA OUT 81
S-CLOCK 59
T-MICOM REQUEST (L) 58
T-MICOM RESET 51
X IN 58
X OUT 55

T-MICOM CS (H) 12
S-DATA OUT 78
S-DATA IN 77
S-CLOCK 75
MUSIC FADE 86
MIC OFF 18
CI-CS (H) 16
CI-REQUEST (L) 74

17 MUSIC LEVEL
8 T-MICOM REQUEST (L)
15 T-MICOM RESET

KEY 1 58
KEY 0 59
TITLE-CS (H) 79
TITLE-RESET (L) 76

IC3001 M37450M4-600FP TITLE/MUSIC CONTROL MI-COM

A0 57 … A15 42

IC3004 MB8464A-15LL S-RAM

A0 10 … A12 2
D0 11 … D7 19
RAM-CS 1 20
RAM-RD (L) 22
RAM-WR (L) 27
RAM-CS 2 26

IC3007 SVM7570M6A MUSIC MI-COM

MUSIC OUT 23
MUSIC-SEL 0 15
MUSIC-SEL 1 16
MUSIC-SEL 2 18
MUSIC-SEL 3 19
MUSIC-START 1 22
MUSIC START 2 20

7 MUSIC-SEL 0
8 MUSIC-SEL 1
5 MUSIC-SEL 2
4 MUSIC-SEL 3
14 MUSIC-RESET

X IN 28
X OUT 29
VD 19
CG-STROBE (H) 2
READ (L) 21
WRITE (L) 20
D7 33 … D0 40

X3002

52 TITLE-CS (H)
53 TITLE-RESET (L)
5 A0 … 43 A15
17 RAM-RD (L)
21 RAM-WR (L)
59 RAM-CS 2
WRITE (L) 44
READ (L) 45
D0 4 … D7 56

IC3003 SLA7490F3Q TITLE

S-CLOCK 51
S-DATA IN 50
X OUT 29
X IN 28
PD 27
Y (DM IN) 49
DM-BLK 32
R1 38
R0 37
G1 36
G0 35
B1 34
B0 33
CHARACTER 1 22
HD 26
VD 25
TS 23

TP3002 PLL
VC3001 PLL
D3001
IC3008 TC7S04F INV.

IC3005 μPD6144AG604 CHARACTER GENERATOR

3 S-DATA OUT
1 S-CLOCK
2 CG-STROBE (H)
8 X OUT
7 X IN

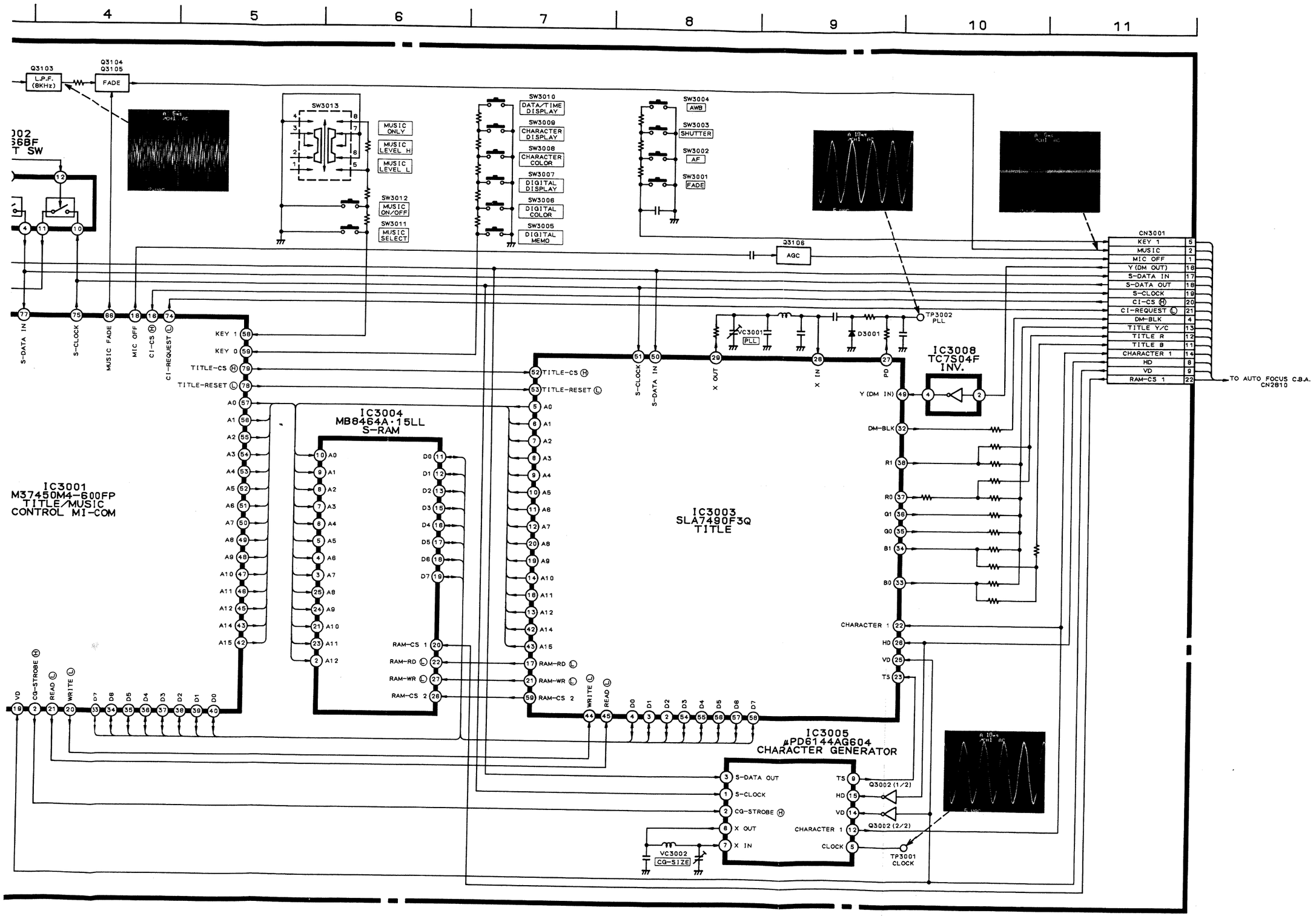
TS 9
HD 15
VD 14
CHARACTER 1 12
CLOCK 5

Q3002 (1/2)
Q3002 (2/2)

VC3002 CG-SIZE

TP3001 CLOCK

SECTION



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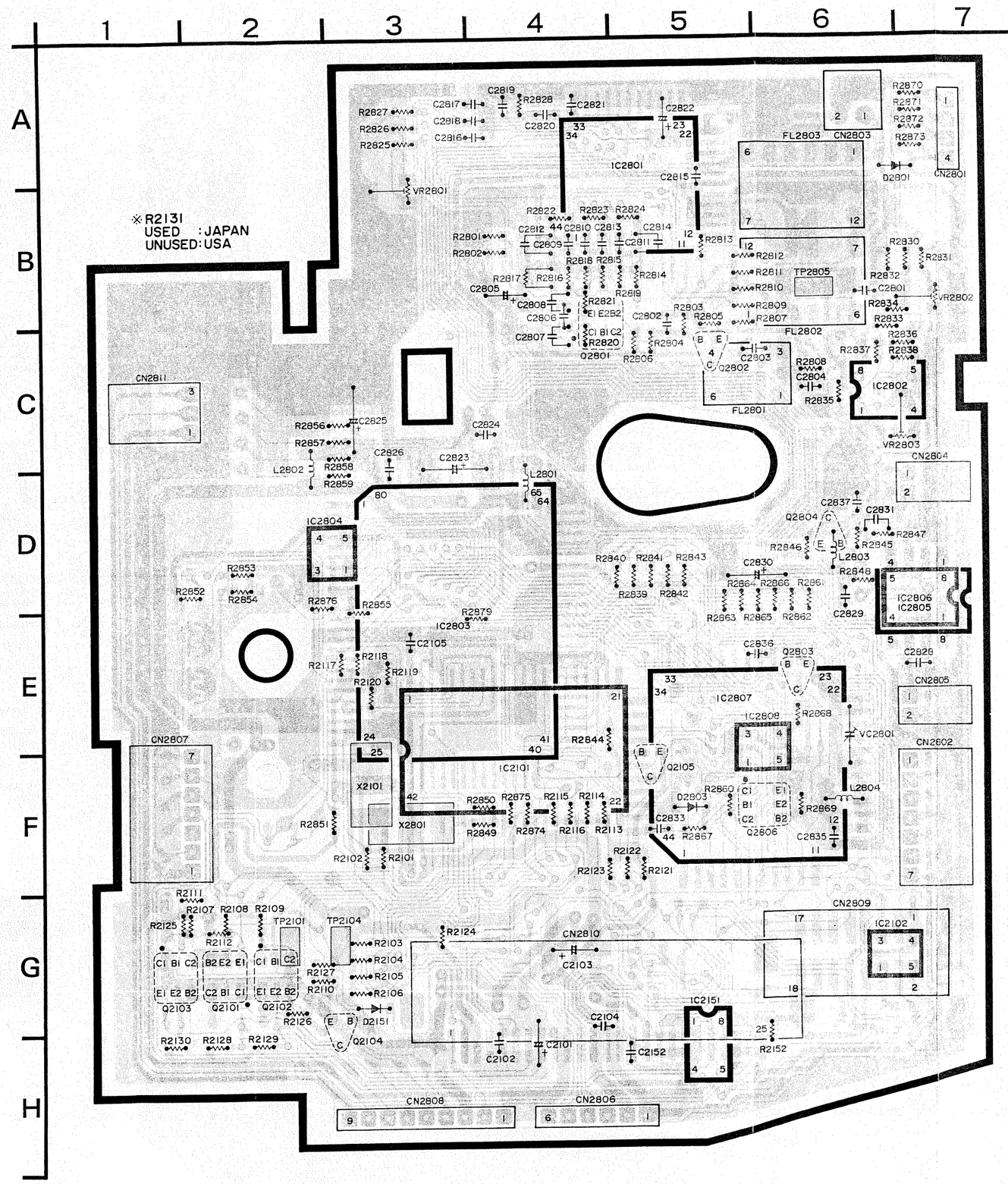
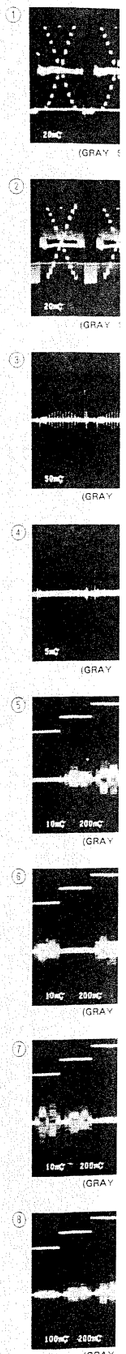
CIRCUIT BOARD DIAGRAM AUTO FOCUS C.B.A.

AUTO FOCUS C.B.A.

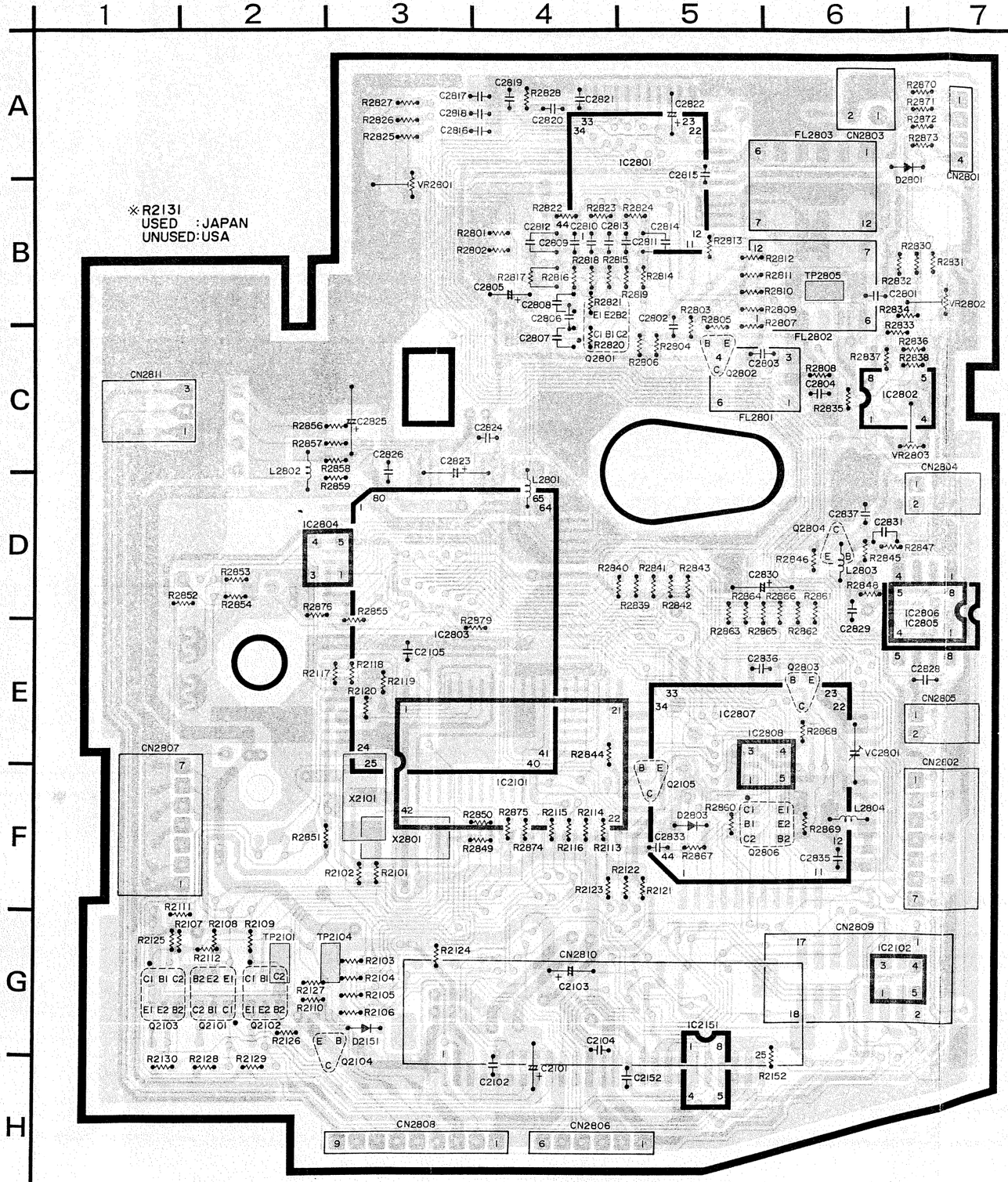
D2151	G-3
D2801	A-6
D2803	F-5
IC2101	F-4
IC2102	G-6
IC2151	G-5
IC2801	A-5
IC2802	C-6
IC2803	E-3
IC2804	D-2
IC2805	E-7
IC2806	E-7
IC2807	E-5
IC2808	E-5
Q2101	G-2
Q2102	G-2
Q2103	G-1
Q2104	G-3
Q2105	F-5
Q2801	C-4
Q2802	C-5
Q2803	E-6
Q2804	D-6
Q2806	F-5
TP2101	G-2
TP2104	G-3
TP2805	B-6
VC2801	E-6
VR2801	B-3
VR2802	B-7



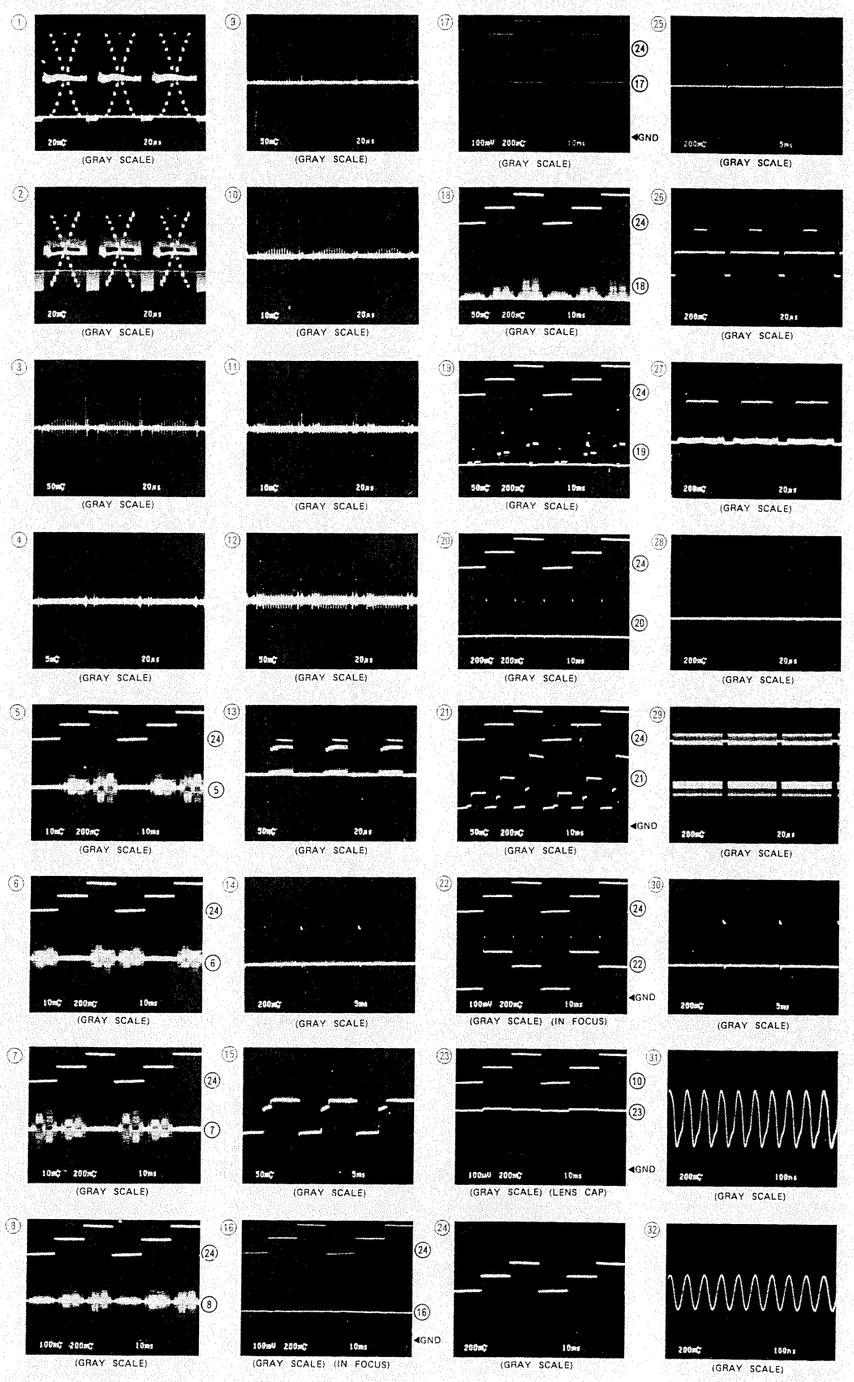
SIGNA



JTO FOCUS C.B.A.



SIGNAL WAVEFORMS



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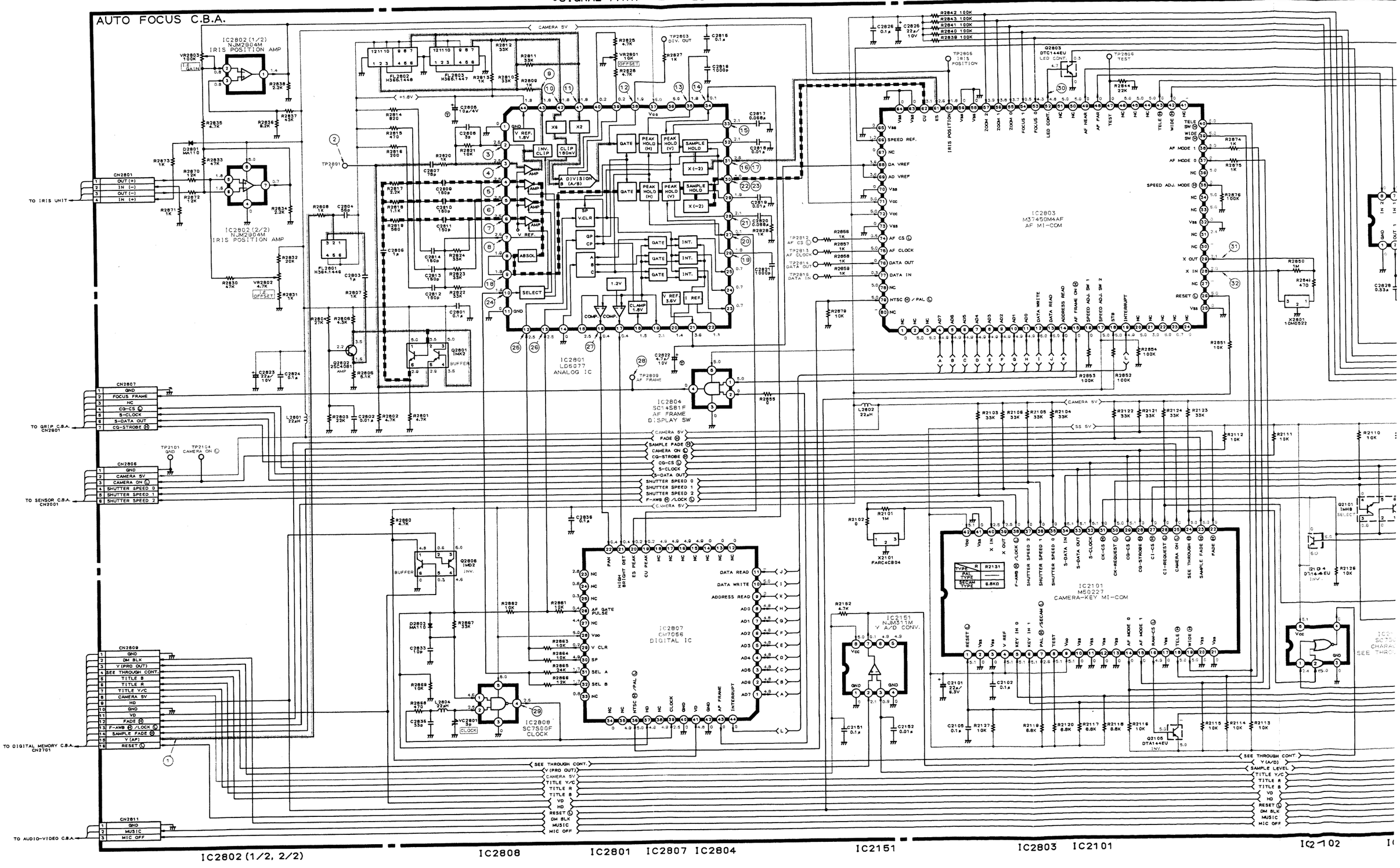
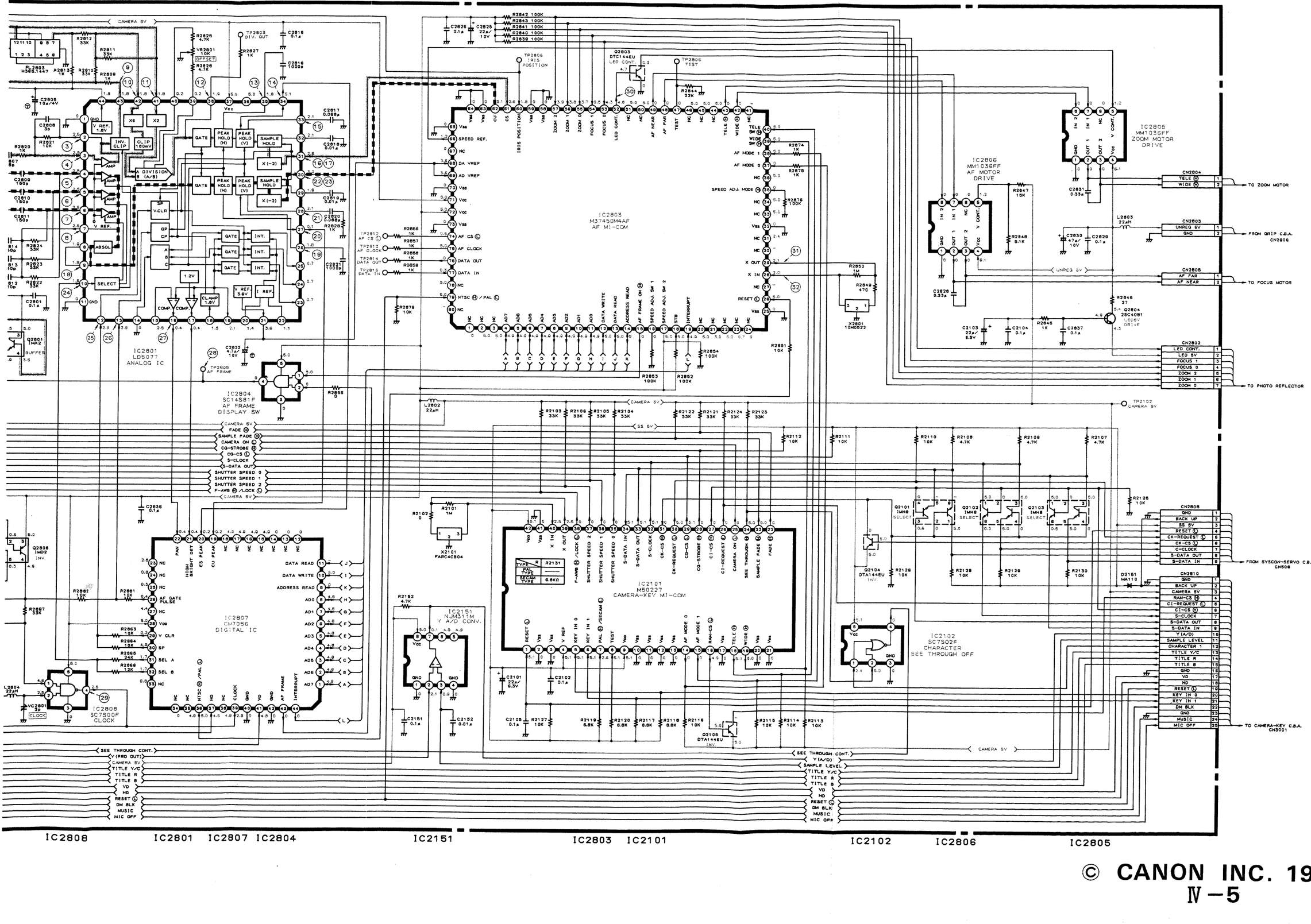
SCHEMATIC DIAGRAM AUTO FOCUS C.B.A.



01 May. 1991

CUS C.B.A.

o SIGNAL PATH ~~~~ ES SIGNAL (BLUE) ▬ ▬ ▬ CU SIGNAL (BLUE)



IC2808 IC2801 IC2807 IC2804 IC2151 IC2803 IC2101 IC2102 IC2806 IC2805

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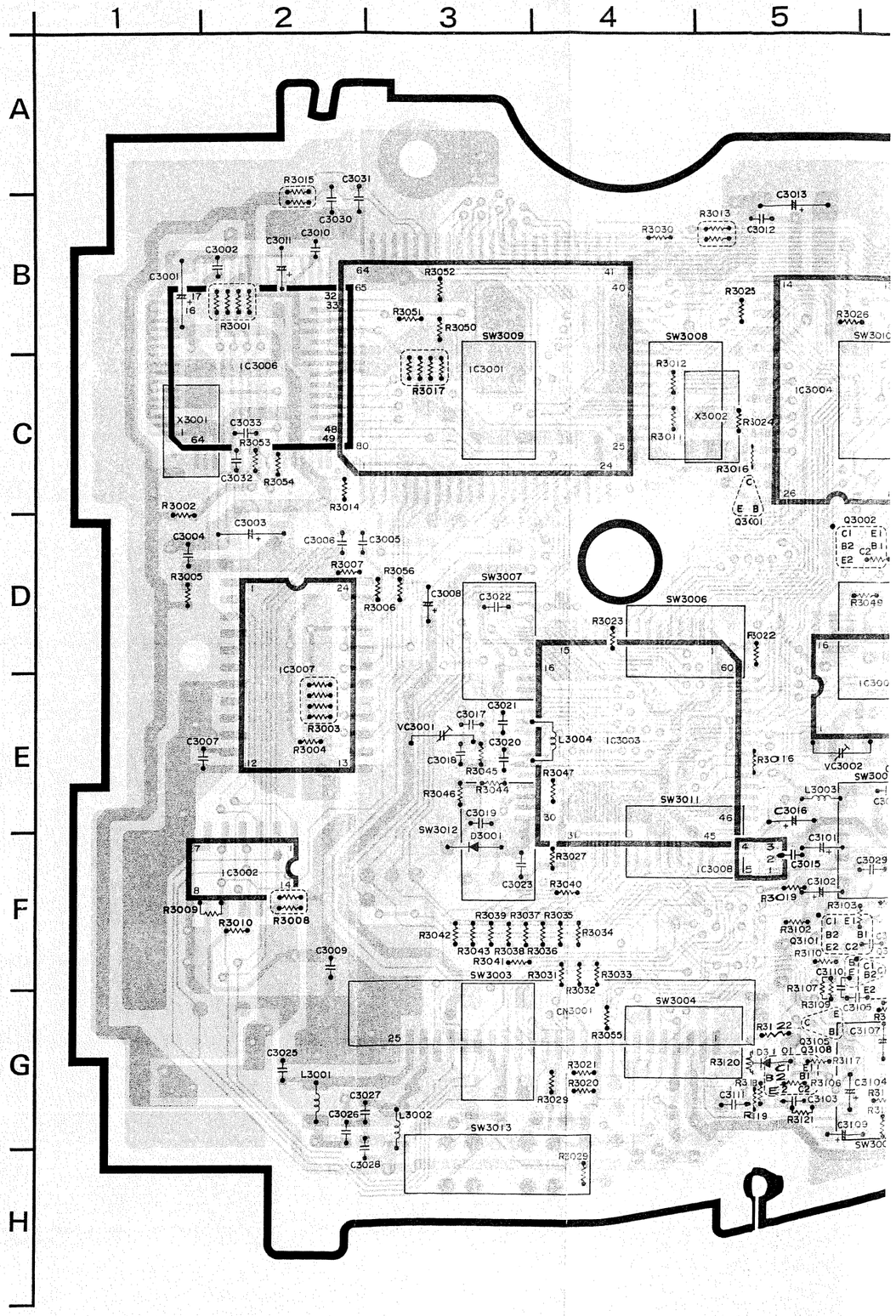
CIRCUIT BOARD DIAGRAM CAMERA-KEY C.B.A.

CAMERA–KEY C.B.A.

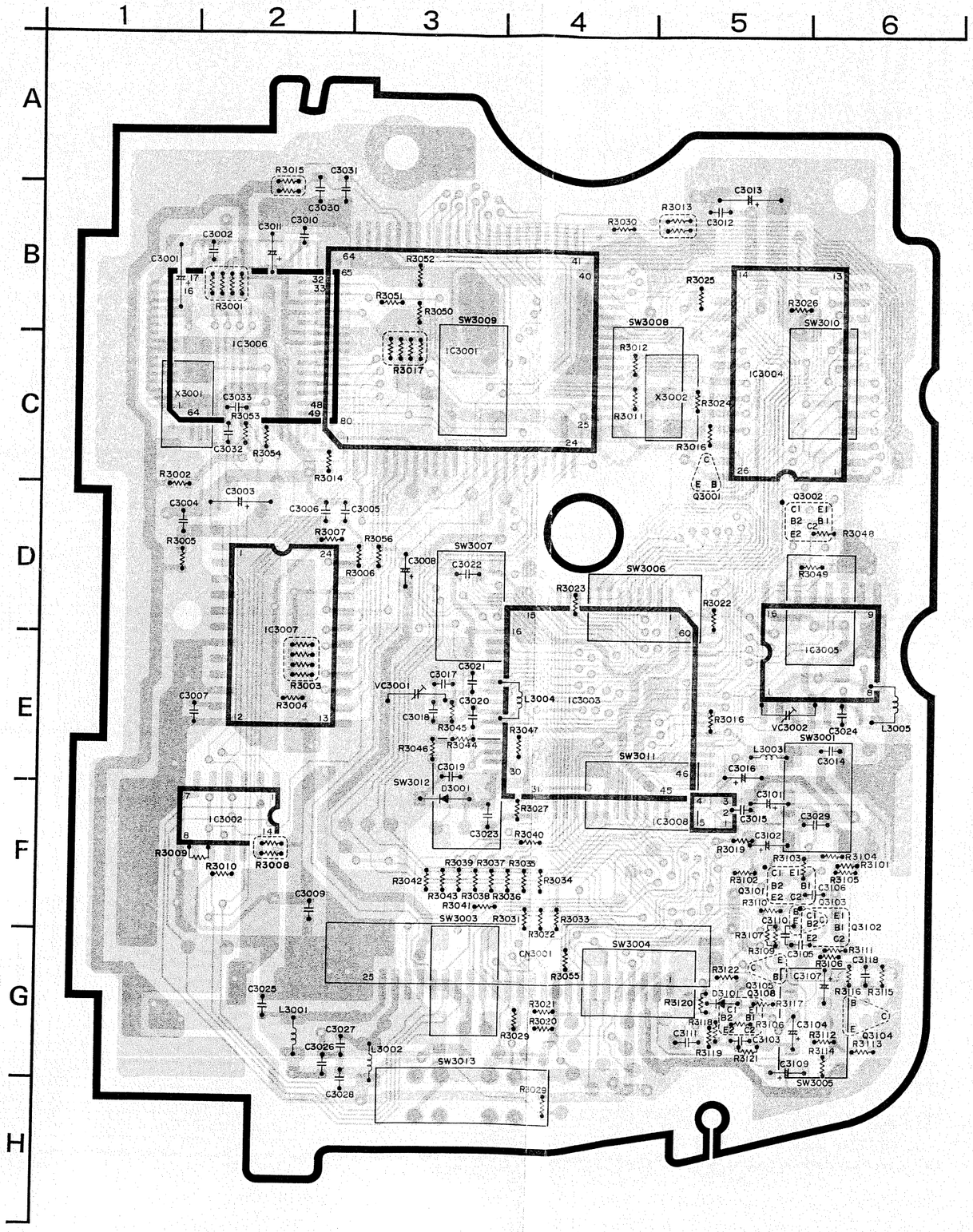
D3001	F–3
D3101	G–5
IC3001	C–3
IC3002	F–2
IC3003	E–4
IC3004	C–5
IC3005	E–6
IC3006	C–2
IC3007	E–2
IC3008	F–5
VC3001	E–3
VC3002	E–5



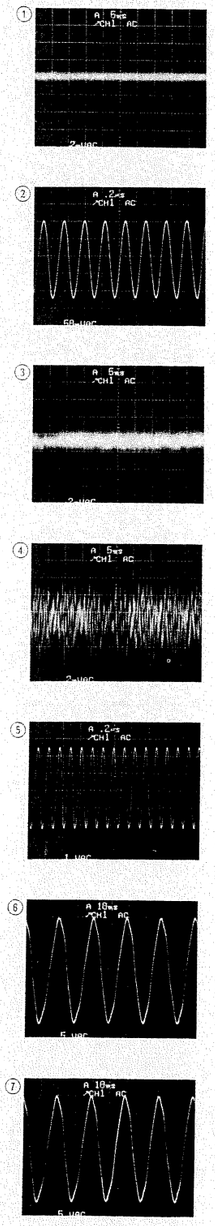
CIRCUIT BOARD DIAGRAM CAMERA-KEY C.B.A.

CAMERA-KEY C.B.A.

D3001	F-3
D3101	G-5
IC3001	C-3
IC3002	F-2
IC3003	E-4
IC3004	C-5
IC3005	E-6
IC3006	C-2
IC3007	E-2
IC3008	F-5
VC3001	E-3
VC3002	E-5



SIGNAL WAVEFORMS



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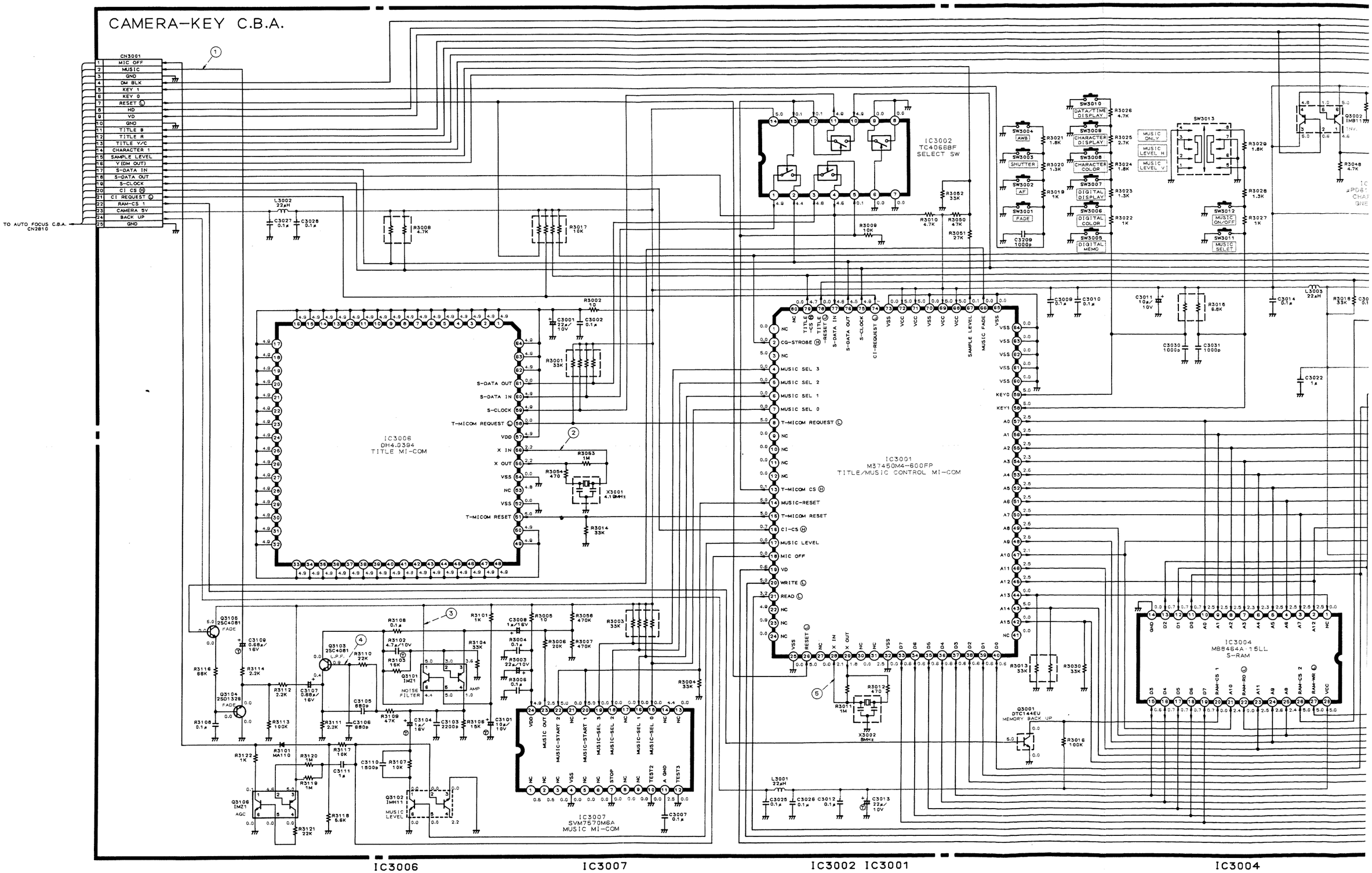
SCHEMATIC DIAGRAM CAMERA-KEY C.B.A.



01 May. 1991

IC3002
TC4066BF
SELECT SW

IC3001
M37450M4-600FP
TITLE/MUSIC CONTROL MI-COM

IC3003
DH4.0383
TITLE

IC3004
MB8464A-15LL
S-RAM

IC3005
μPD6144AG604
CHARACTER
GNERATOR

IC3008
TC7S04F
INV.

IC3007
SVM7570M6A
USIC MI-COM

IC3007 IC3002 IC3001 IC3004 IC3005 IC3003 IC3008

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V15356

Canovision 8

SERVICE MANUAL

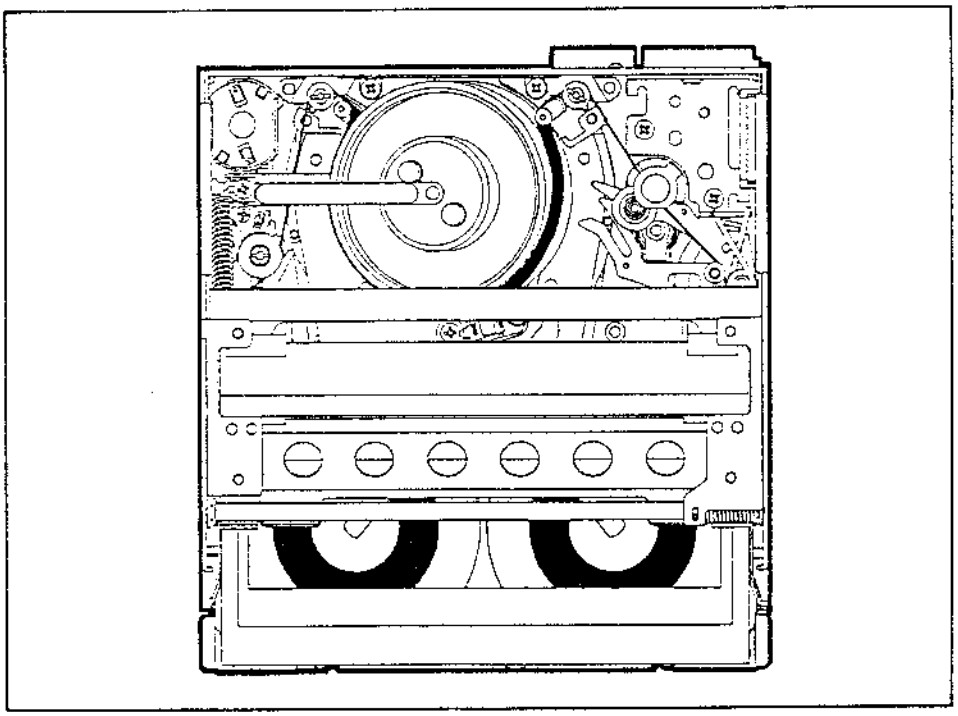
MC-4B

NTSC

PAL

SECAM

MECHANICAL CHASSIS



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Video Technical Service Dept.
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Chapter 1 Operations

1.Main Parts in Mechanical Section

1-1 Locations and Nomenclatures

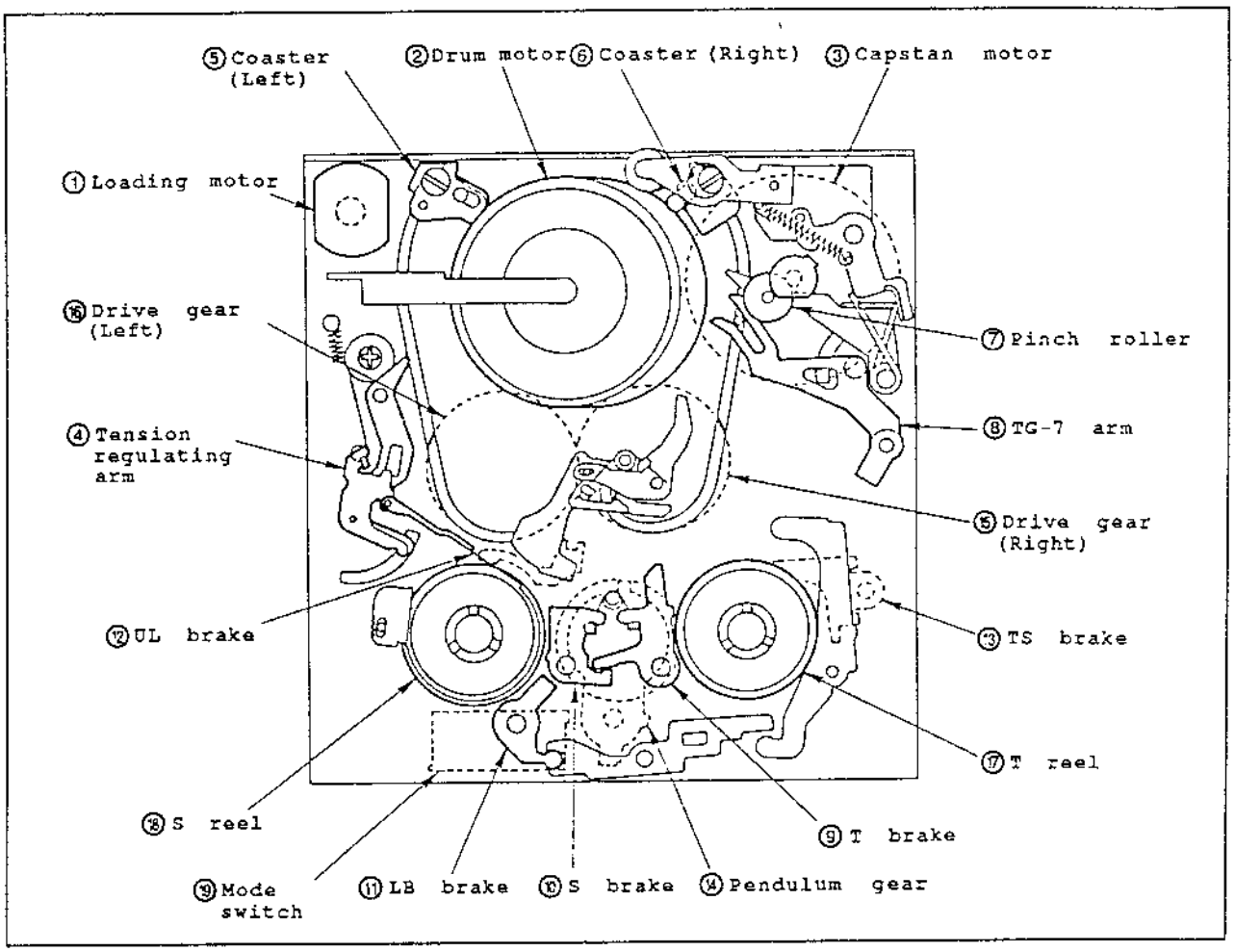


Fig.I-1

1-2 Relationships between Each Mode and Mode Switch

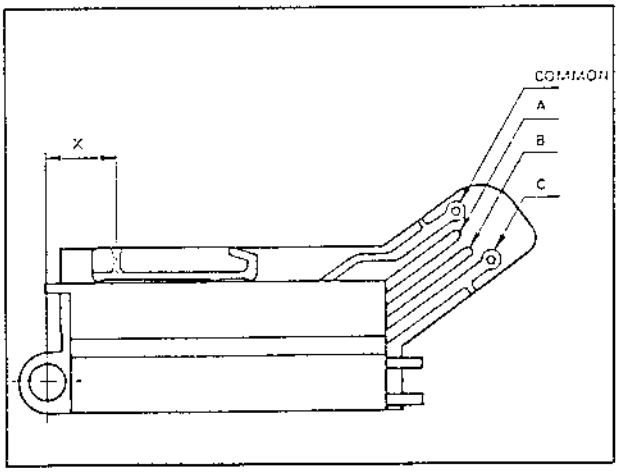


Fig.I-2

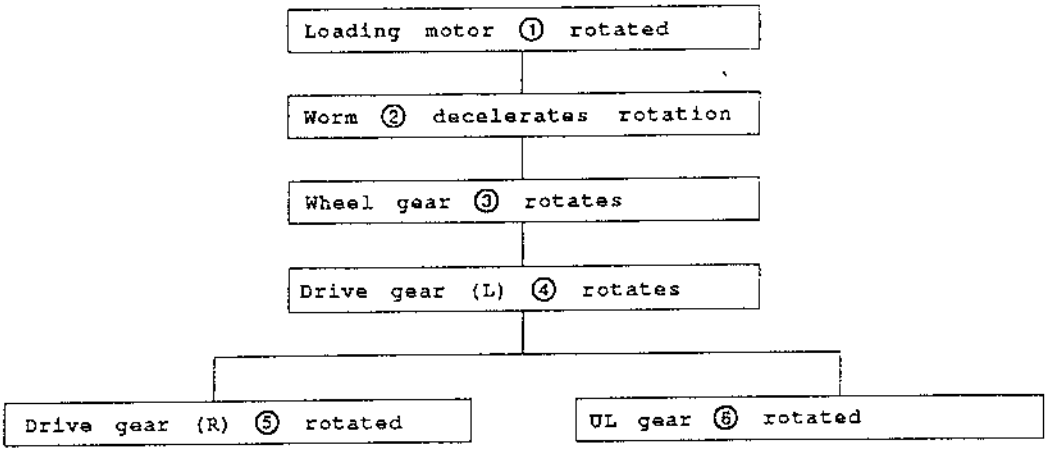
Modes	X (mm)	A	B	C
Eject	1.7-2.7	opened	opened	shorted
Blank	2.7-5.7	opened	opened	opened
Load/Unload	5.7-6.7	opened	shorted	shorted
Blank	6.7-8.1	opened	shorted	opened
Stop	8.1-9.1	shorted	shorted	opened
Blank	9.1-12.0	shorted	opened	opened
Play	12.0-13.3	shorted	opened	shorted

Table I-1

Note: "Opened" and "Shorted" in the table is versus the COMMON.

2.Operation in Each Section

2-1 Gear Train


Loading motor ① rotated
Worm ② decelerates rotation
Wheel gear ③ rotates
Drive gear (L) ④ rotates
Drive gear (R) ⑤ rotated
UL gear ⑥ rotated

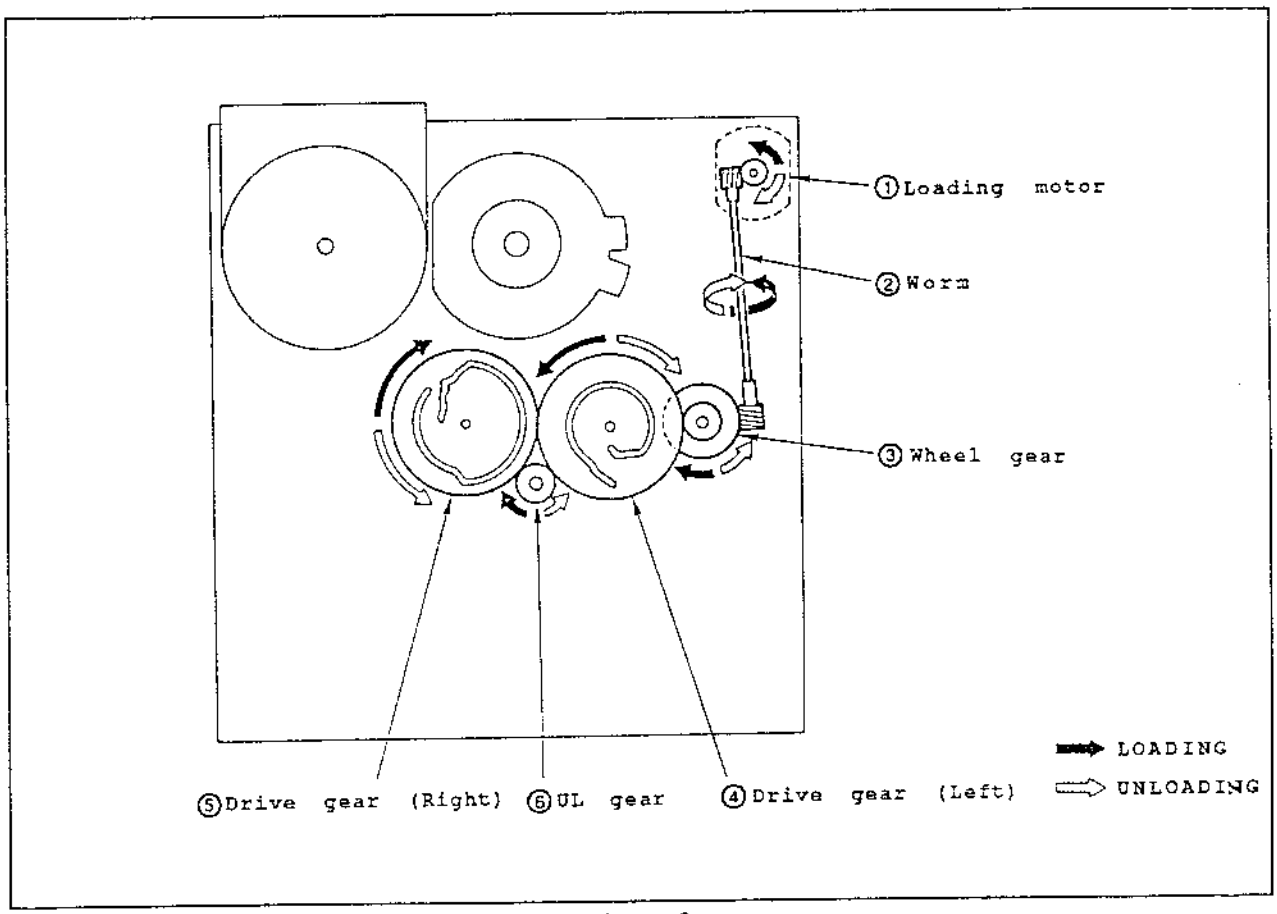
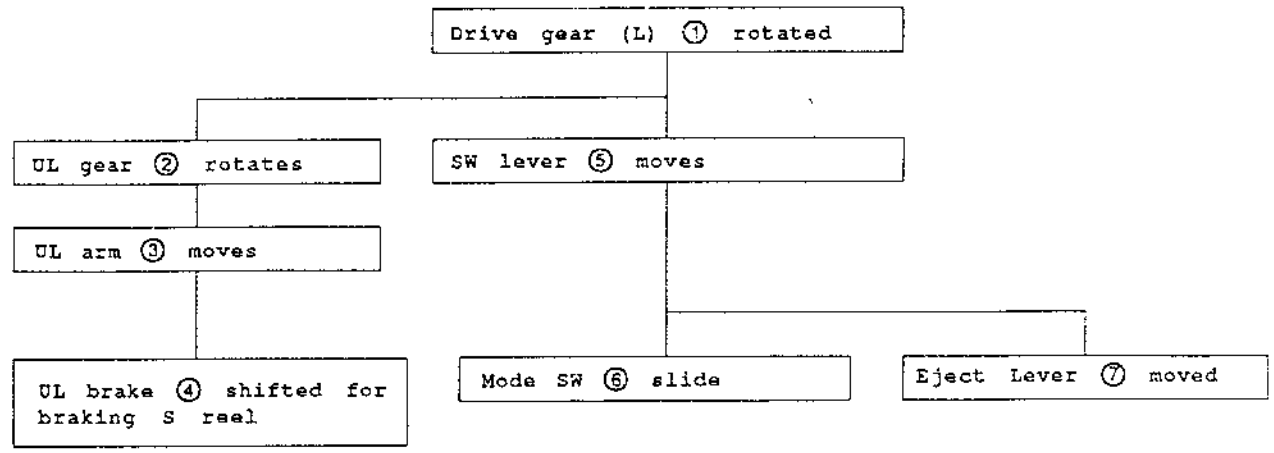


Fig.I-3

2-2 Mode SW, Eject Lever, UL Brake


Drive gear (L) ① rotated
UL gear ② rotates
SW lever ⑤ moves
UL arm ③ moves
UL brake ④ shifted for braking S reel
Mode SW ⑥ slide
Eject Lever ⑦ moved

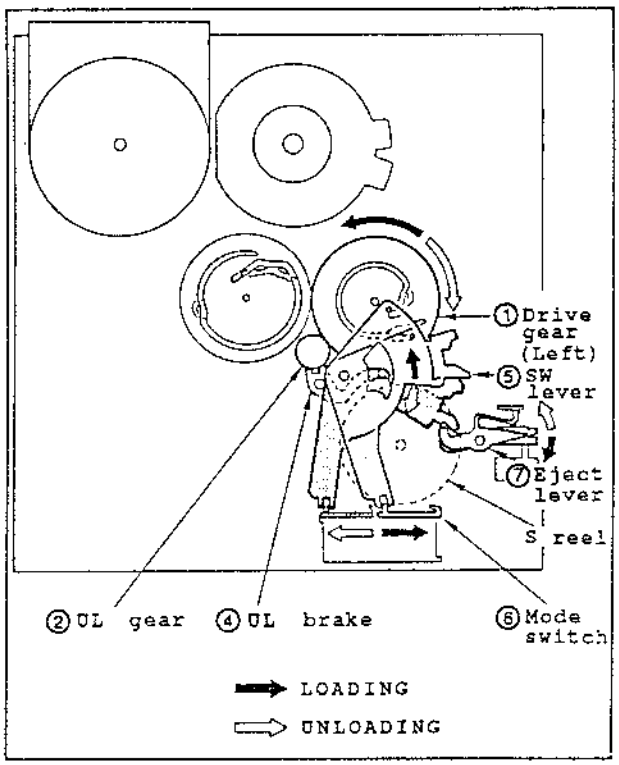


Fig.I-4

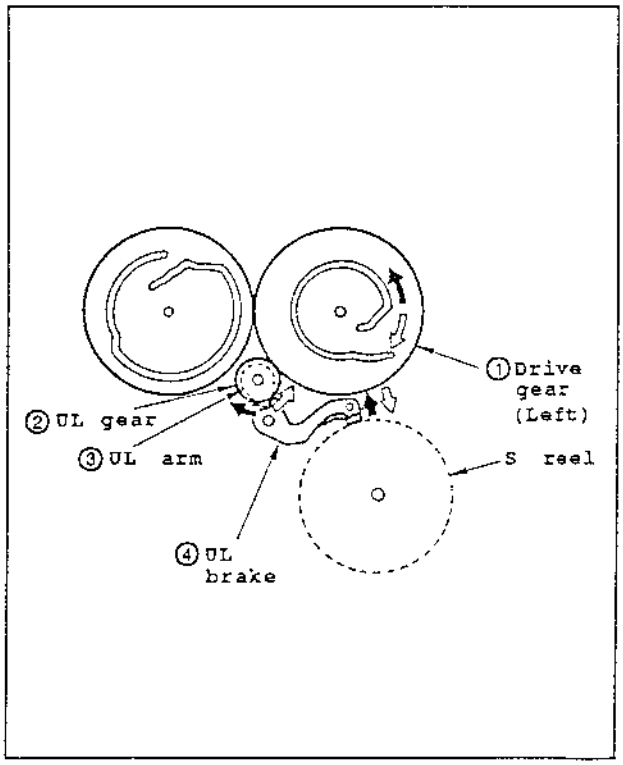
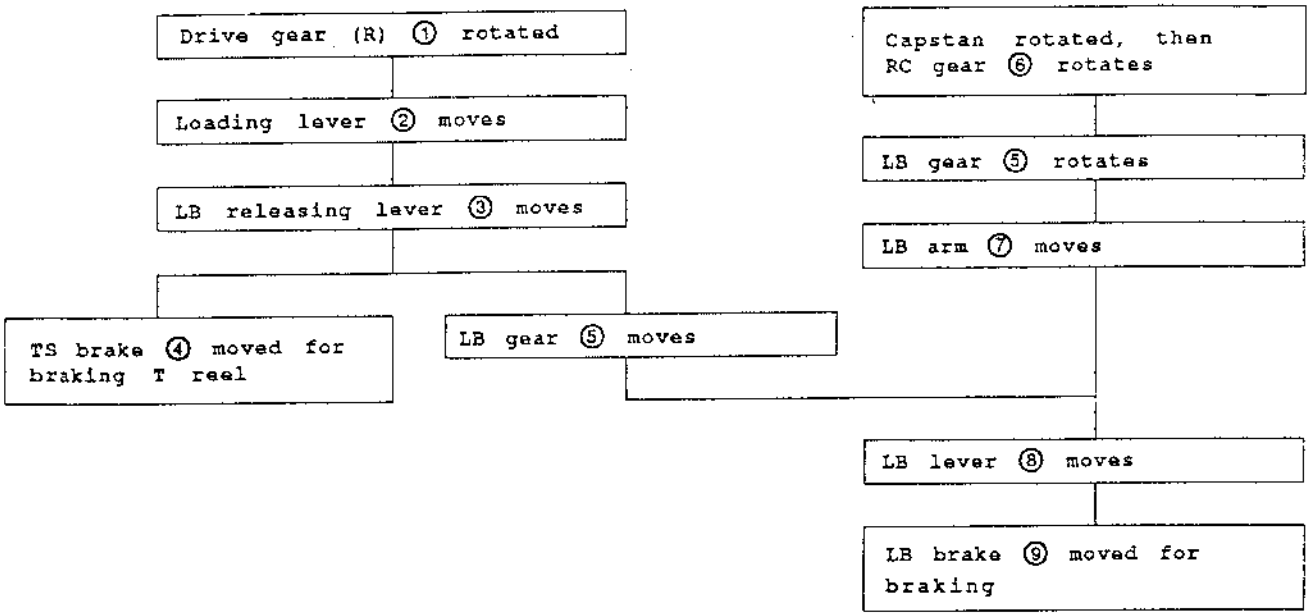


Fig.I-5

2-3 TS Brake, LB Brake


Drive gear (R) ① rotated
Loading lever ② moves
LB releasing lever ③ moves
TS brake ④ moved for braking T reel
LB gear ⑤ moves
Capstan rotated, then RC gear ⑥ rotates
LB gear ⑤ rotates
LB arm ⑦ moves
LB lever ⑧ moves
LB brake ⑨ moved for braking

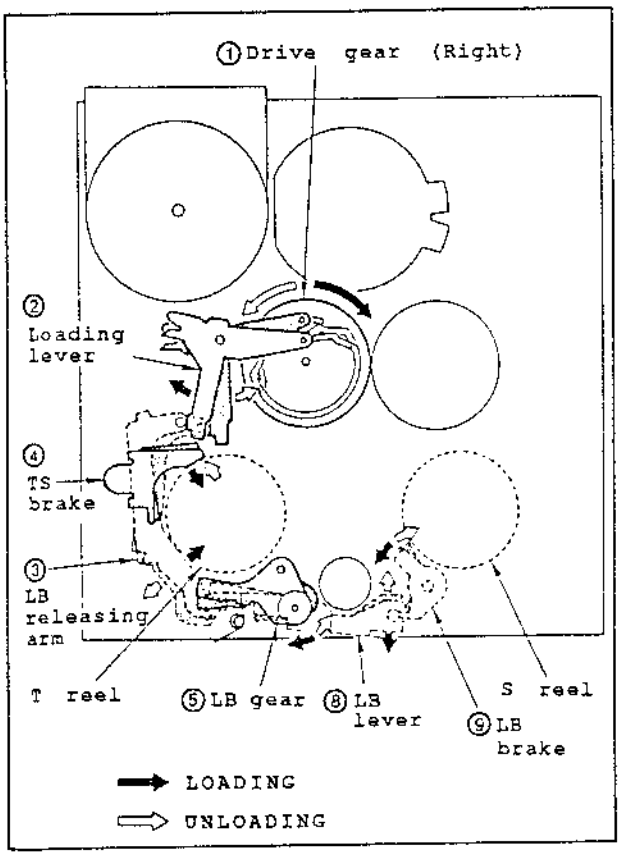


Fig. I-6

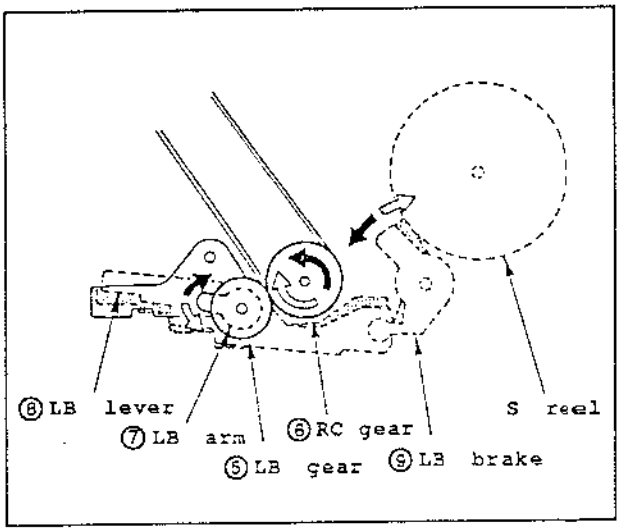


Fig. I-7

2-4 T Brake, S Brake

Drive gear (R) ① rotated

Brake releasing arm ③ moves along cam ②

T brake ④ moves for releasing T reel breaking

S brake ⑤ moved for releasing S reel breaking

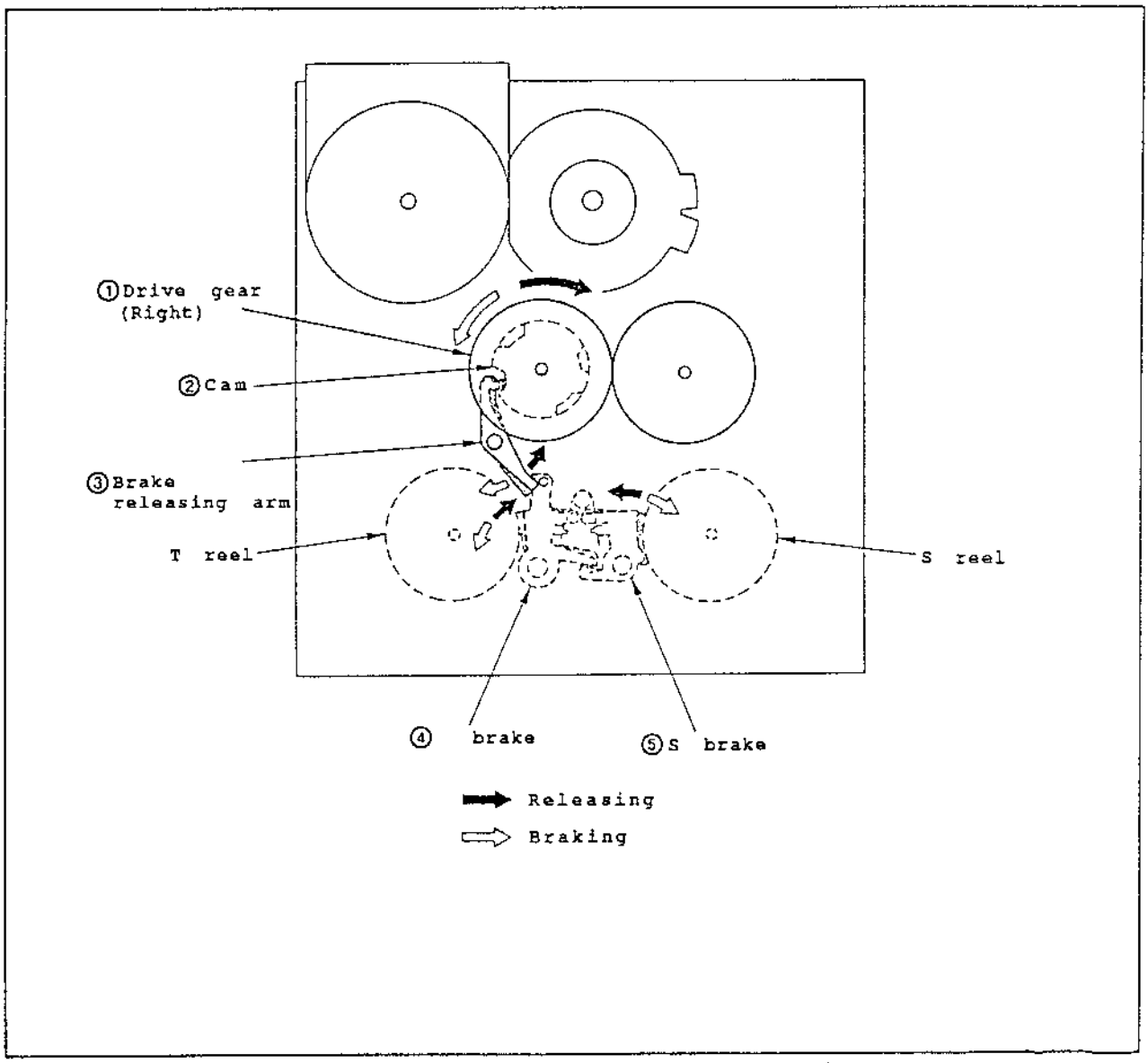
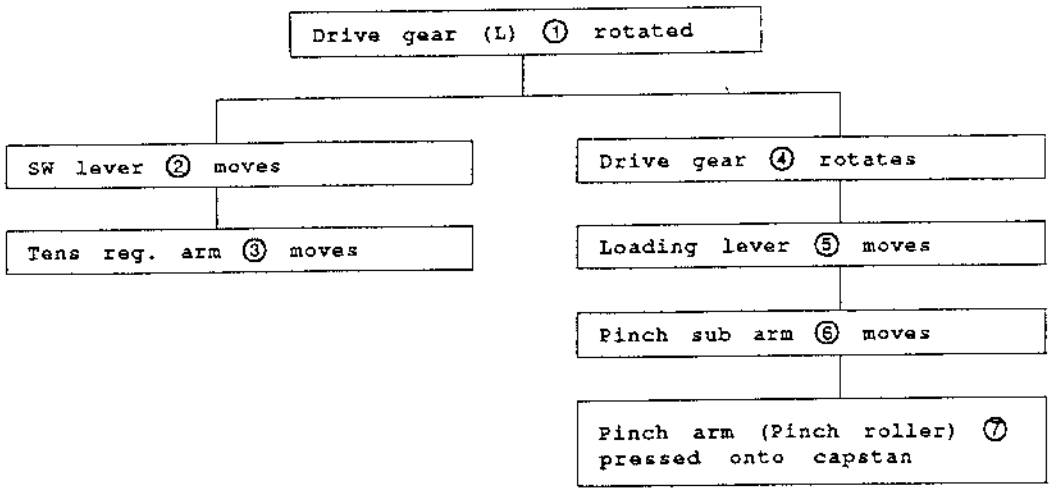


Fig. I-8

2-5 Tension Regulator Arm, Pinch Arm (Pinch Roller)


Drive gear (L) ① rotated
SW lever ② moves
Tens reg. arm ③ moves
Drive gear ④ rotates
Loading lever ⑤ moves
Pinch sub arm ⑥ moves
Pinch arm (Pinch roller) ⑦ pressed onto capstan

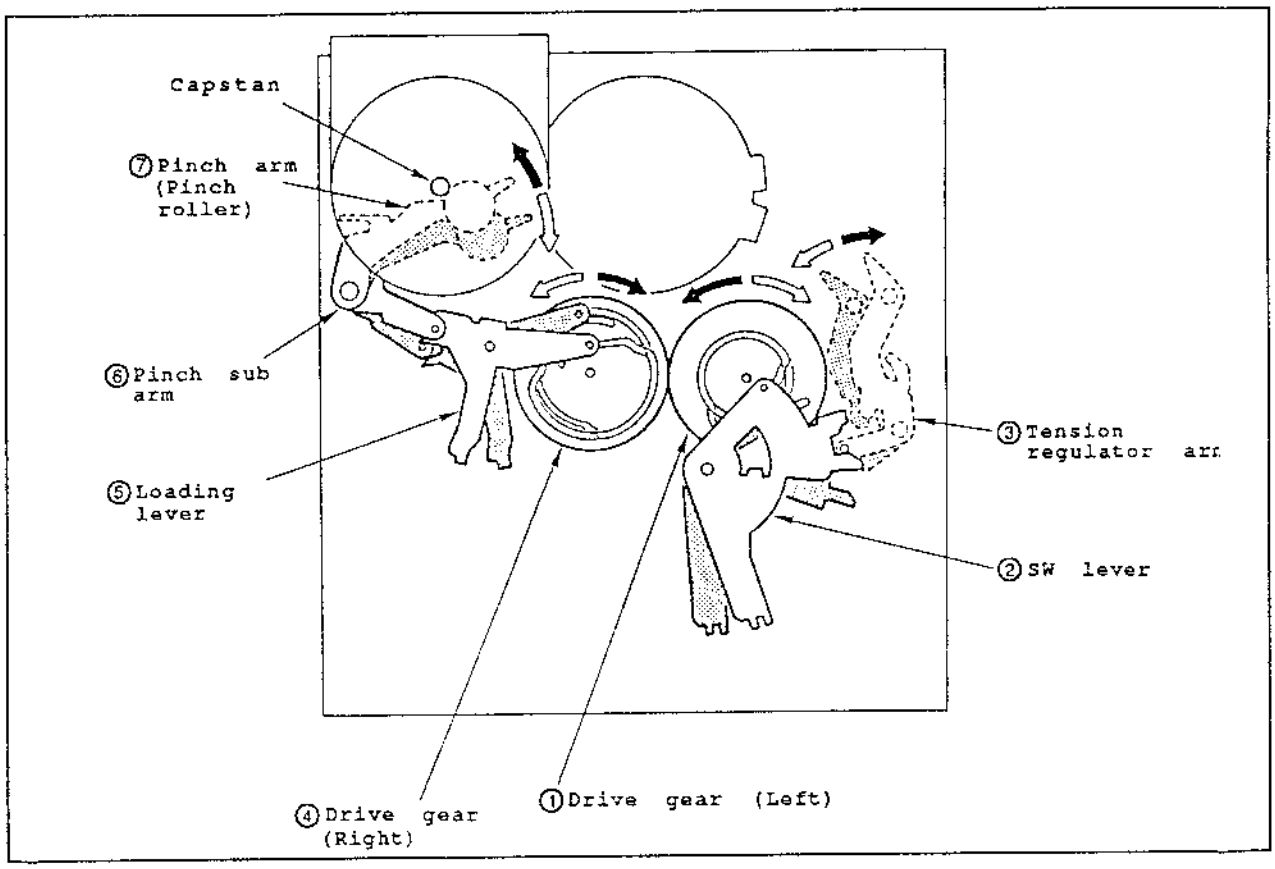
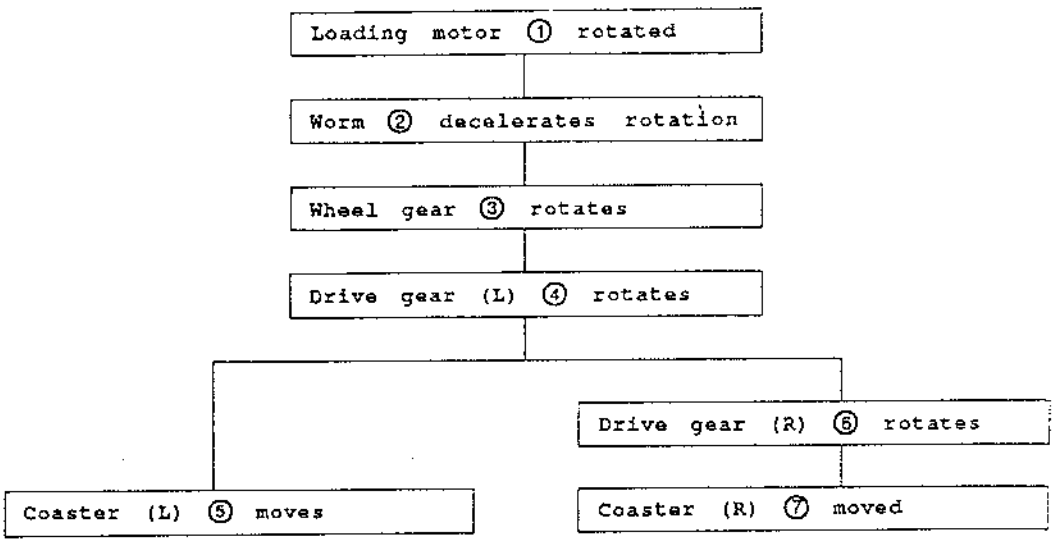


Fig. I-9

2-6 Coasters (Right/Left)


Loading motor ① rotated
Worm ② decelerates rotation
Wheel gear ③ rotates
Drive gear (L) ④ rotates
Drive gear (R) ⑥ rotates
Coaster (L) ⑤ moves
Coaster (R) ⑦ moved

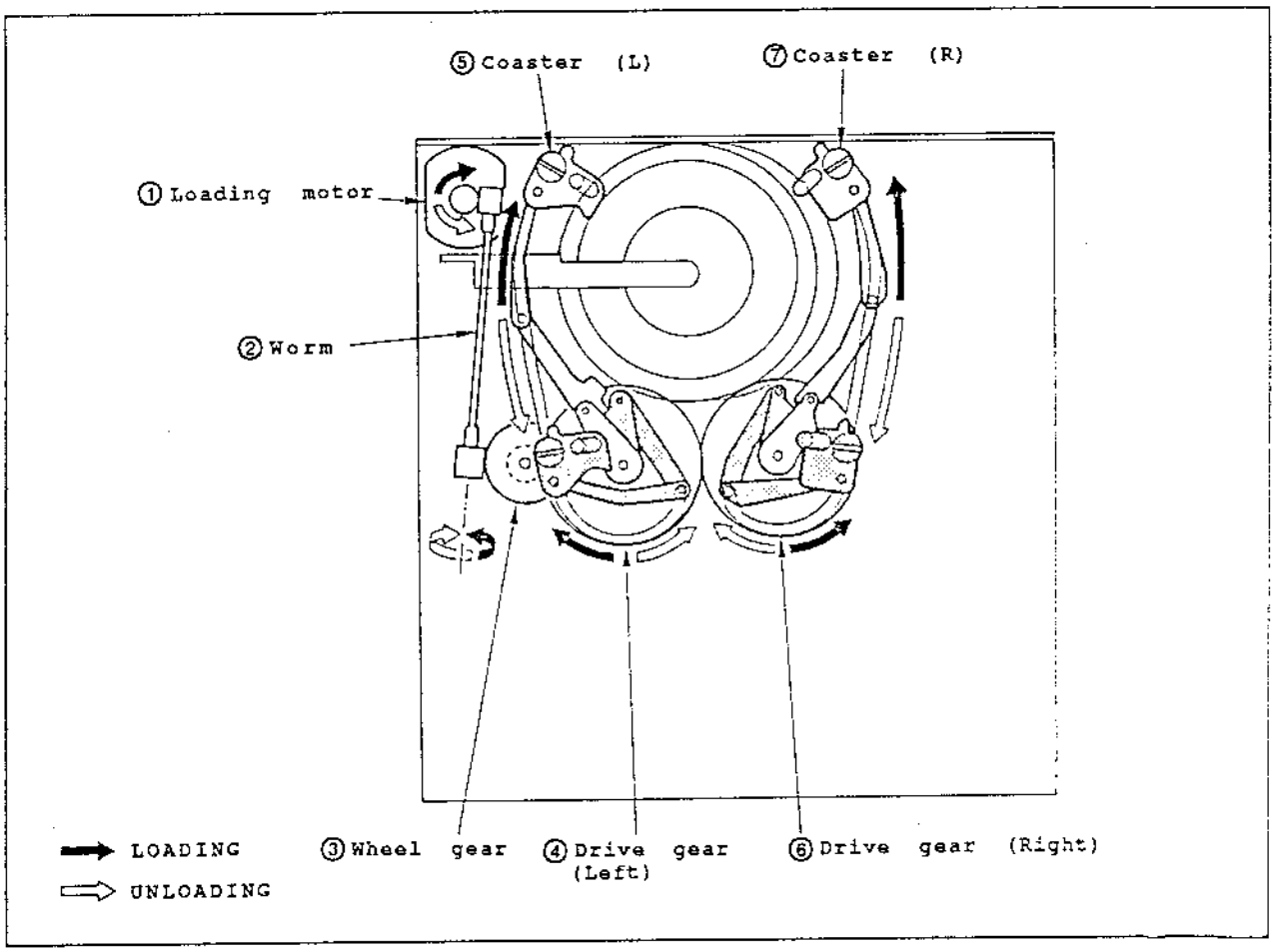
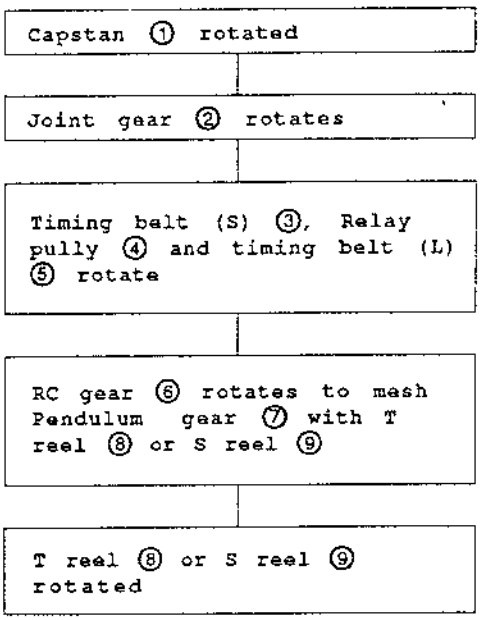


Fig. I-10

2-7 Reel Tables (Take-up/Supply)


Capstan ① rotated
Joint gear ② rotates
Timing belt (S) ③, Relay pully ④ and timing belt (L) ⑤ rotate
RC gear ⑥ rotates to mash Pendulum gear ⑦ with T reel ⑧ or S reel ⑨
T reel ⑧ or S reel ⑨ rotated

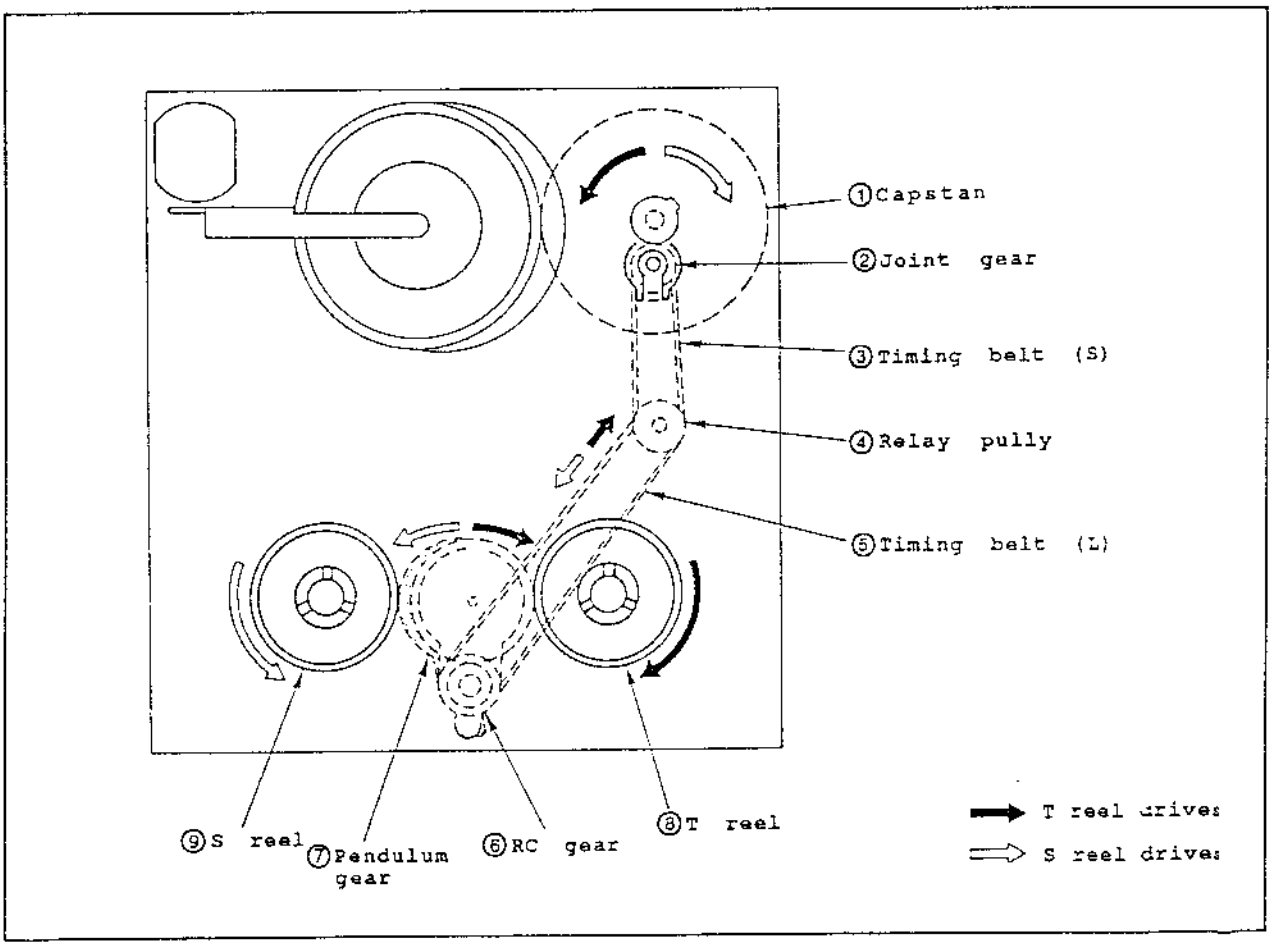


Fig.I-11

3. Each Mode Transition

3-1 Cassette In

Cassette tape is set

Claw ① releases lid locking ②. (By this, Cassette lid becomes openable freely.)

Push cassette comp. ③ toward direction A.

Locking arm ④ moves in direction B to lock cassette compartment ③.

Cassette lid ⑦ opens

Convex part ⑧ released for releasing reel lock. (Tape can be picked up freely.)

Eject lever ⑤ pushed to turn Push SW ⑥ on

Ⓐ

Continued to next page.

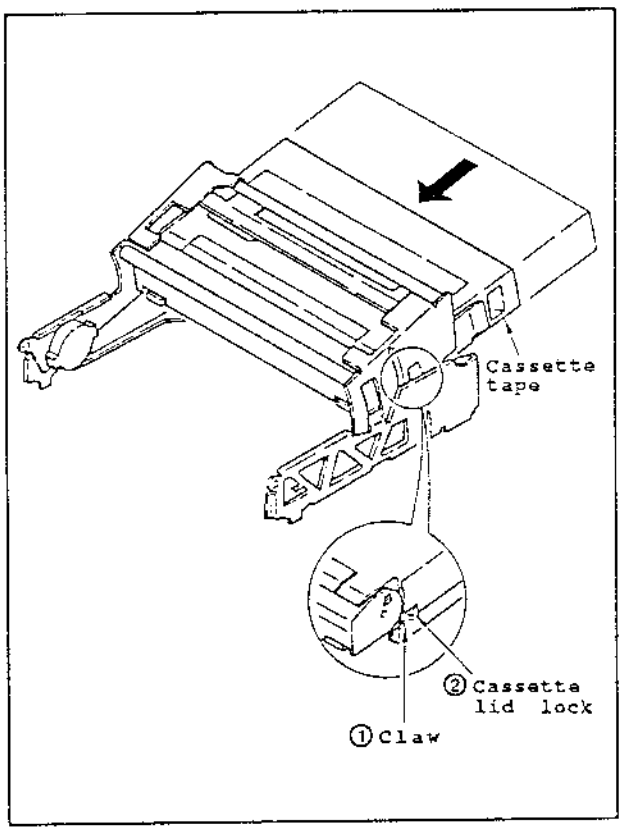


Fig.I-12

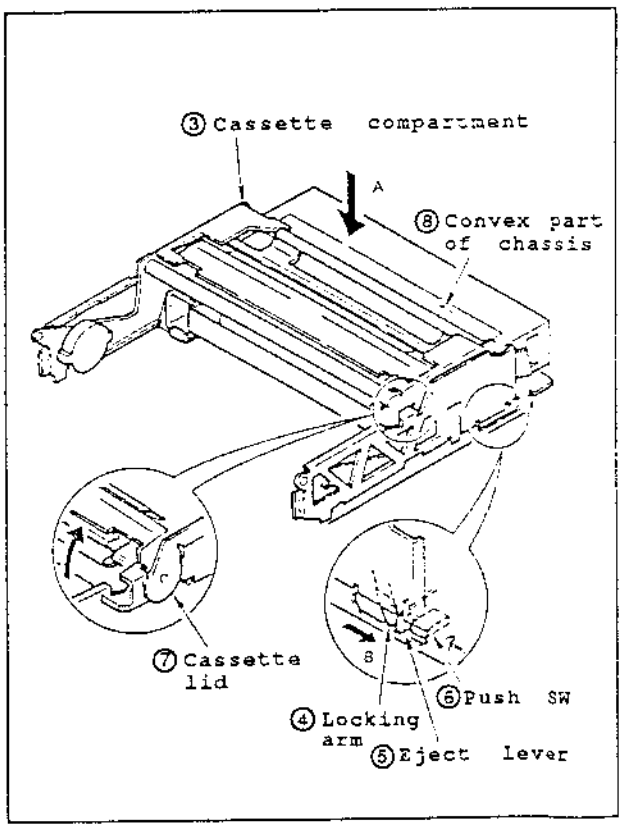


Fig.I-13

Ⓐ

Drum ① rotates

Capstan ② rotates reversely

Pendulum gear ③ meshed with S reel ⑤

Capstan ② rotates normally

Pendulum gear ③ meshed with T reel ④

Capstan ② rotates slightly and reversely

Tape looseness before loading removed

Loading ⑥ motor rotates

LB lever ④ moves, then LB brake ⑤ brakes S reel ⑤

Pendulum gear ③ moves toward S reel side

S brake ⑦ and T brake ⑧ released from both reels

Coaster (R) ⑨, Coaster (L) ⑩ TG-7 arm ⑪ make loading

Tens. reg. arm ⑫ makes loading

Pinch roller ⑬ makes loading

HC roller ⑭ touched to drum

Tape looseness before pinch-pressed removed

Capstan ② rotates a little

Both reels braked by S brake ⑦, T brake ⑧

Ⓑ

LB lever ④ moves, then LB brake ⑤ released from S reel

Pendulum gear ③ moves toward T reel ④ side

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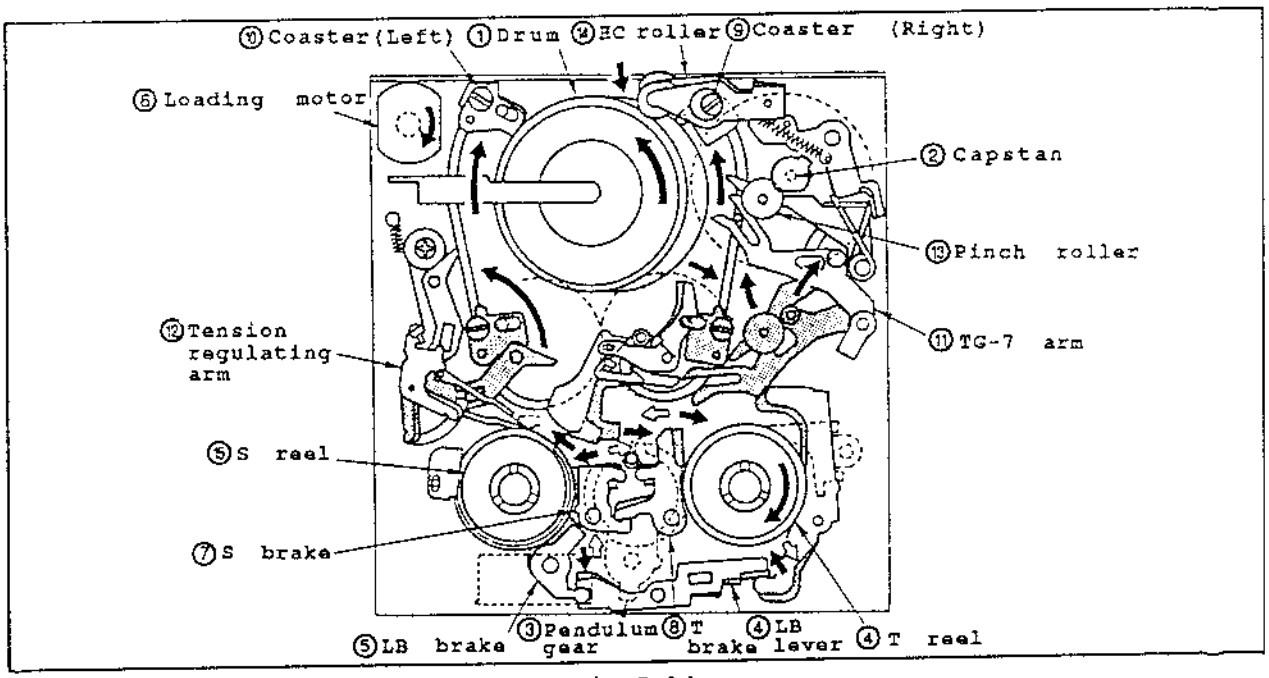
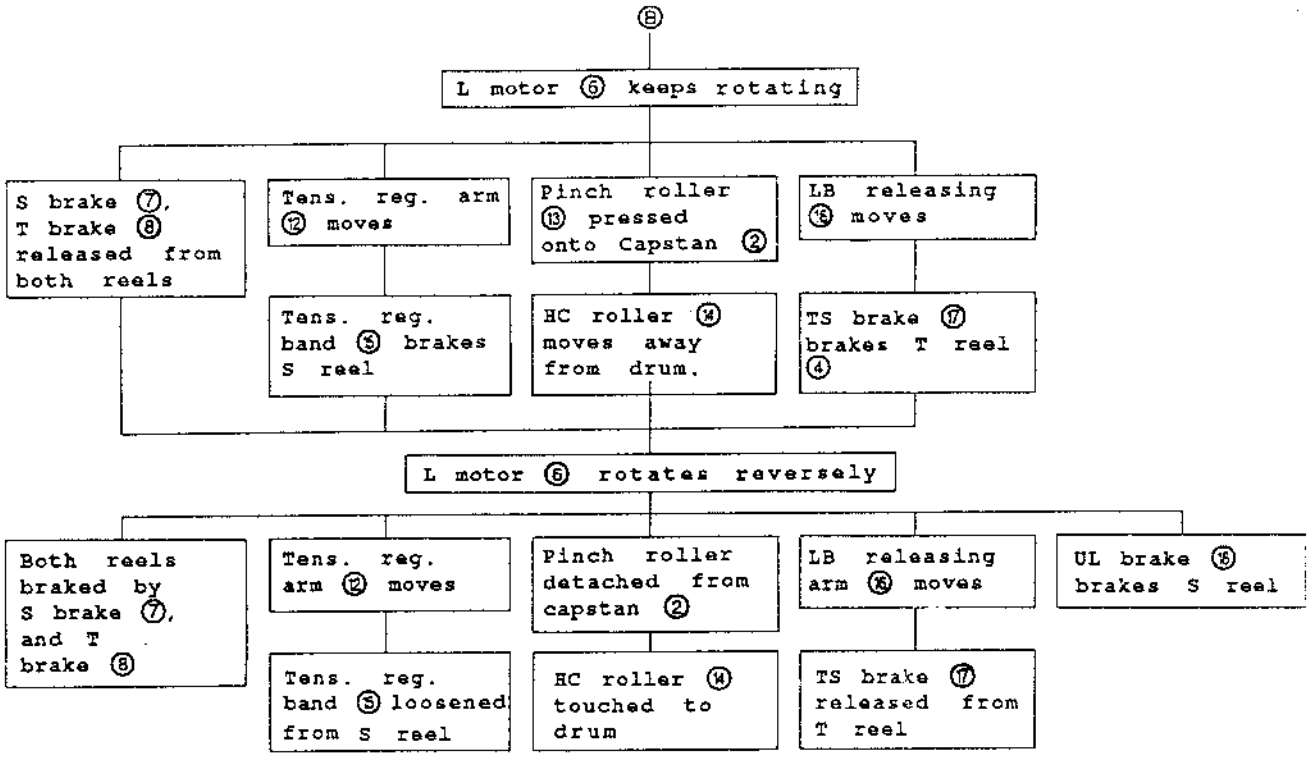


Fig.I-14


Ⓑ
L motor ⑥ keeps rotating
S brake ⑦, T brake ⑧ released from both reels
Tens. reg. arm ⑫ moves
Pinch roller ⑬ pressed onto Capstan ②
LB releasing ⑯ moves
Tens. reg. band ⑤ brakes S reel
HC roller ⑭ moves away from drum.
TS brake ⑰ brakes T reel ④
L motor ⑥ rotates reversely
Both reels braked by S brake ⑦, and T brake ⑧
Tens. reg. arm ⑫ moves
Pinch roller detached from capstan ②
LB releasing arm ⑯ moves
UL brake ⑮ brakes S reel
Tens. reg. band ⑤ loosened from S reel
HC roller ⑭ touched to drum
TS brake ⑰ released from T reel

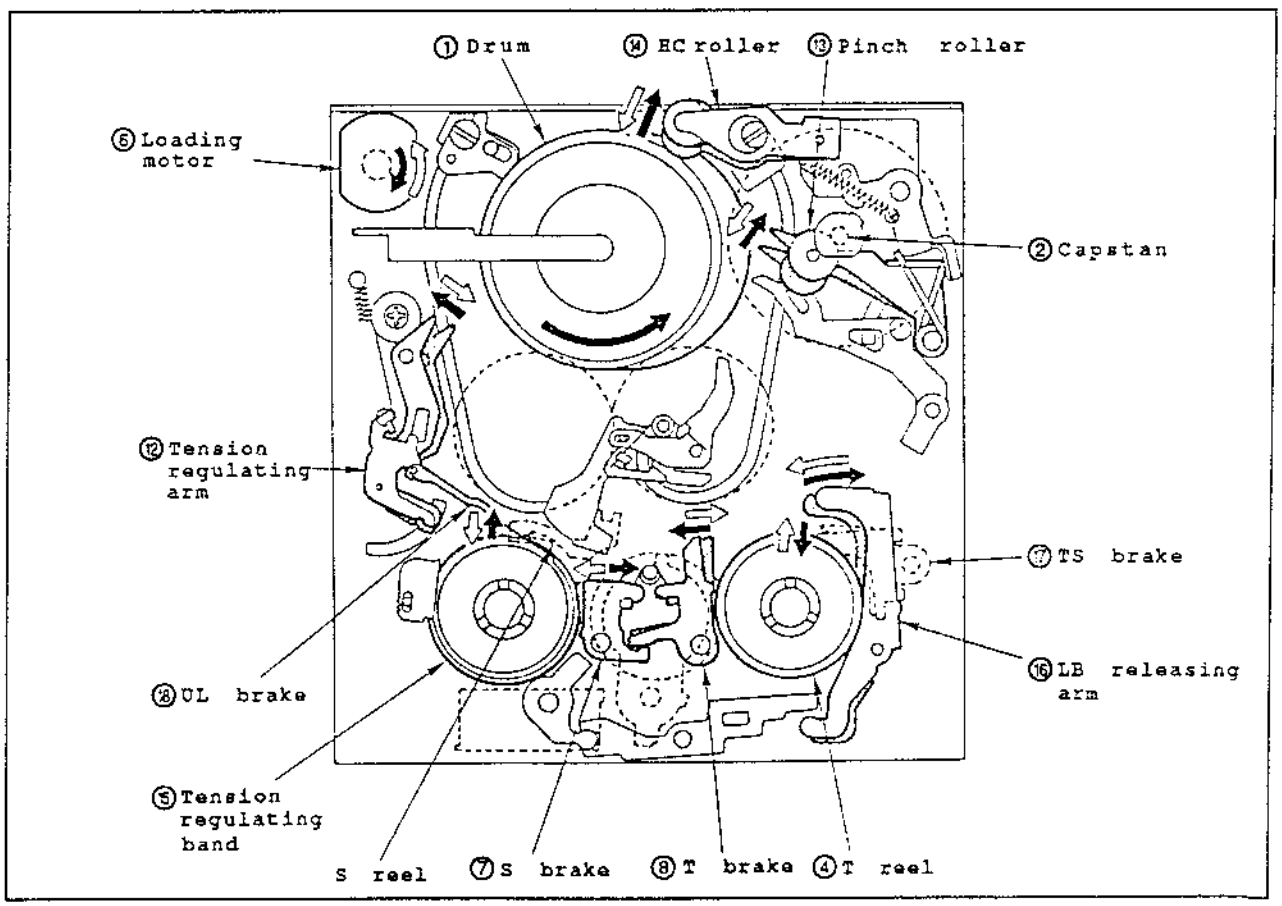
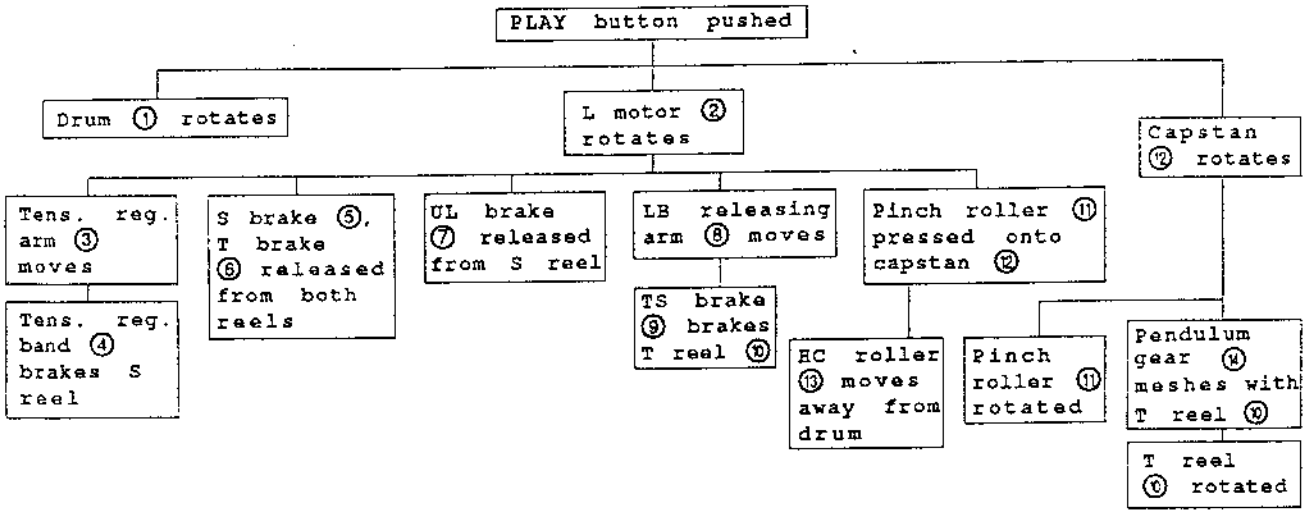

① Drum
⑭ HC roller
⑬ Pinch roller
⑥ Loading motor
② Capstan
⑫ Tension regulating arm
⑰ TS brake
⑯ LB releasing arm
⑮ UL brake
⑤ Tension regulating band
S reel
⑦ S brake
⑧ T brake
④ T reel

Fig.I-15

3-2 Play


PLAY button pushed
Drum ① rotates
L motor ② rotates
Capstan ⑫ rotates
Tens. reg. arm ③ moves
S brake ⑤, T brake ⑥ released from both reels
UL brake ⑦ released from S reel
LB releasing arm ⑧ moves
Pinch roller ⑪ pressed onto capstan ⑫
Tens. reg. band ④ brakes S reel
TS brake ⑨ brakes T reel ⑩
HC roller ⑬ moves away from drum
Pinch roller ⑪ rotated
Pendulum gear ⑭ meshes with T reel ⑩
T reel ⑩ rotated

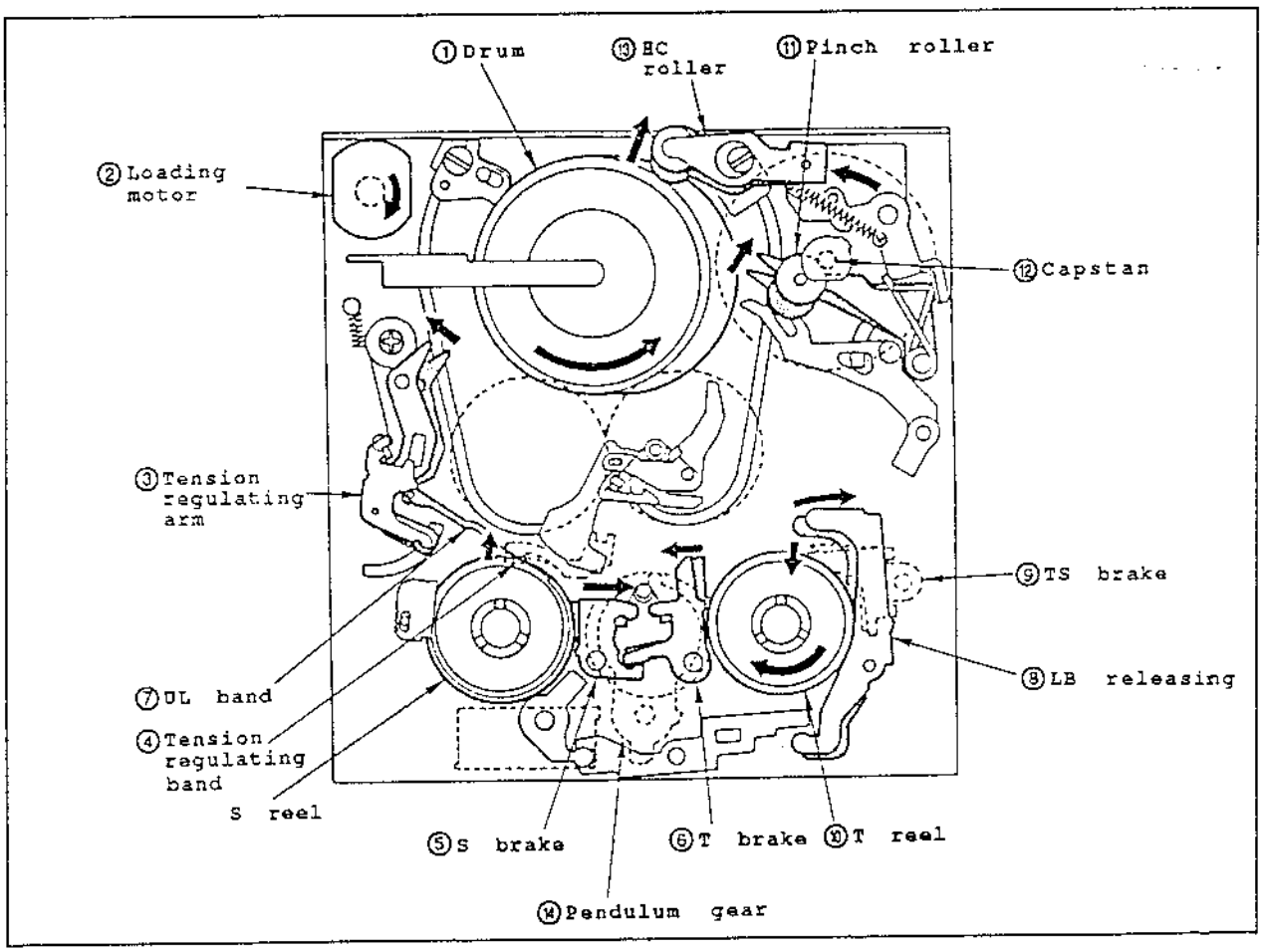


Fig.I-16

3-3 Tape Path

Tape pulled from S reel ①

Tension applied to tape by tens. reg. arm ②

Tape runs along TG-2 roller guide ③

Tape runs along TG-3 ④, then tilted by coaster (L) ⑤

Tape wound on drum ⑥

Tape tilt removed by coaster. (R) ⑦, then runs along TG-6 ⑧

Tape runs between capstan ⑨ and pinch roller ⑩ pressed

Tape runs along TG-7 ⑪

Tape taken up by T reel ⑫

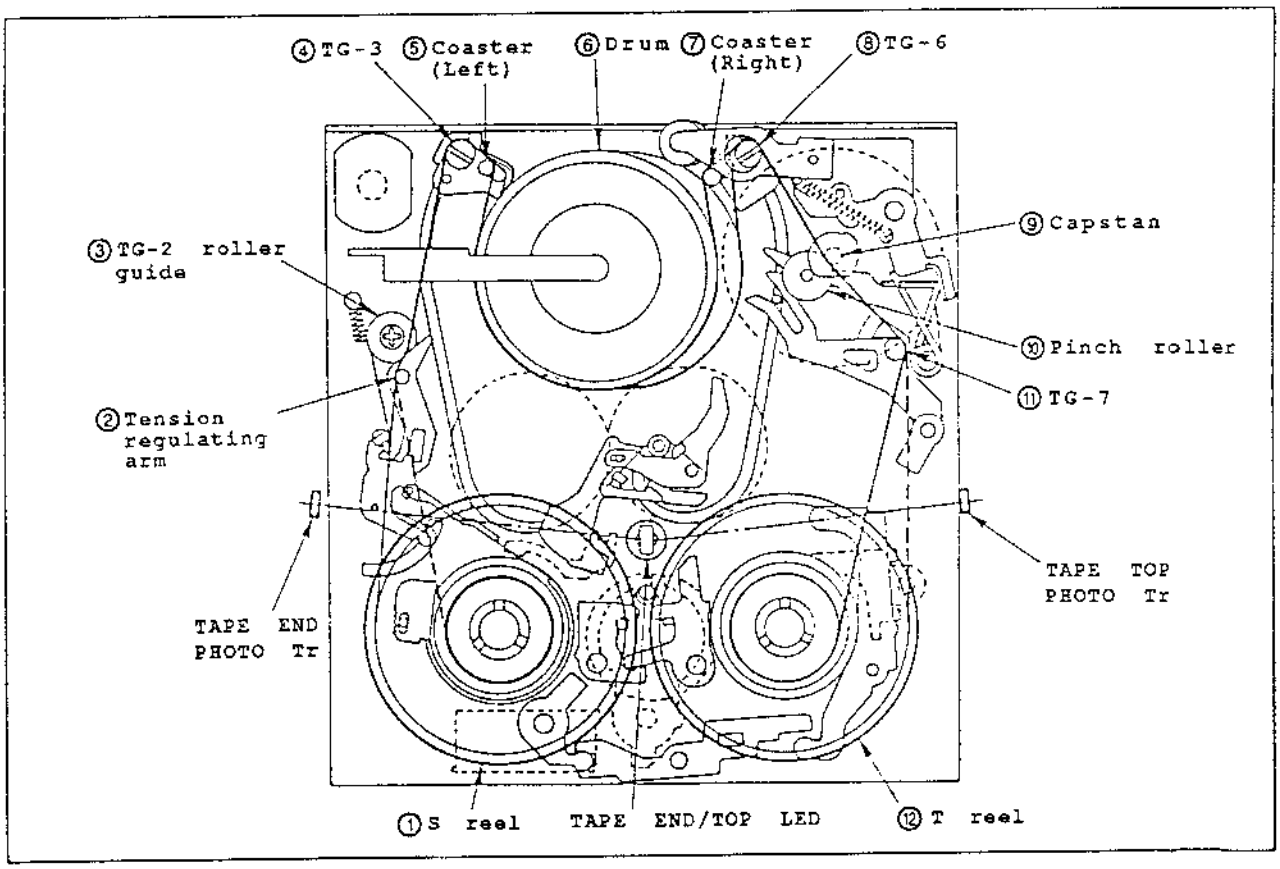


Fig.I-17

3-4 Pause

PAUSE button pushed at playback

Capstan ① stops

Pendulum gear ② stops

Pinch roller ④ stopped

T reel ③ stopped

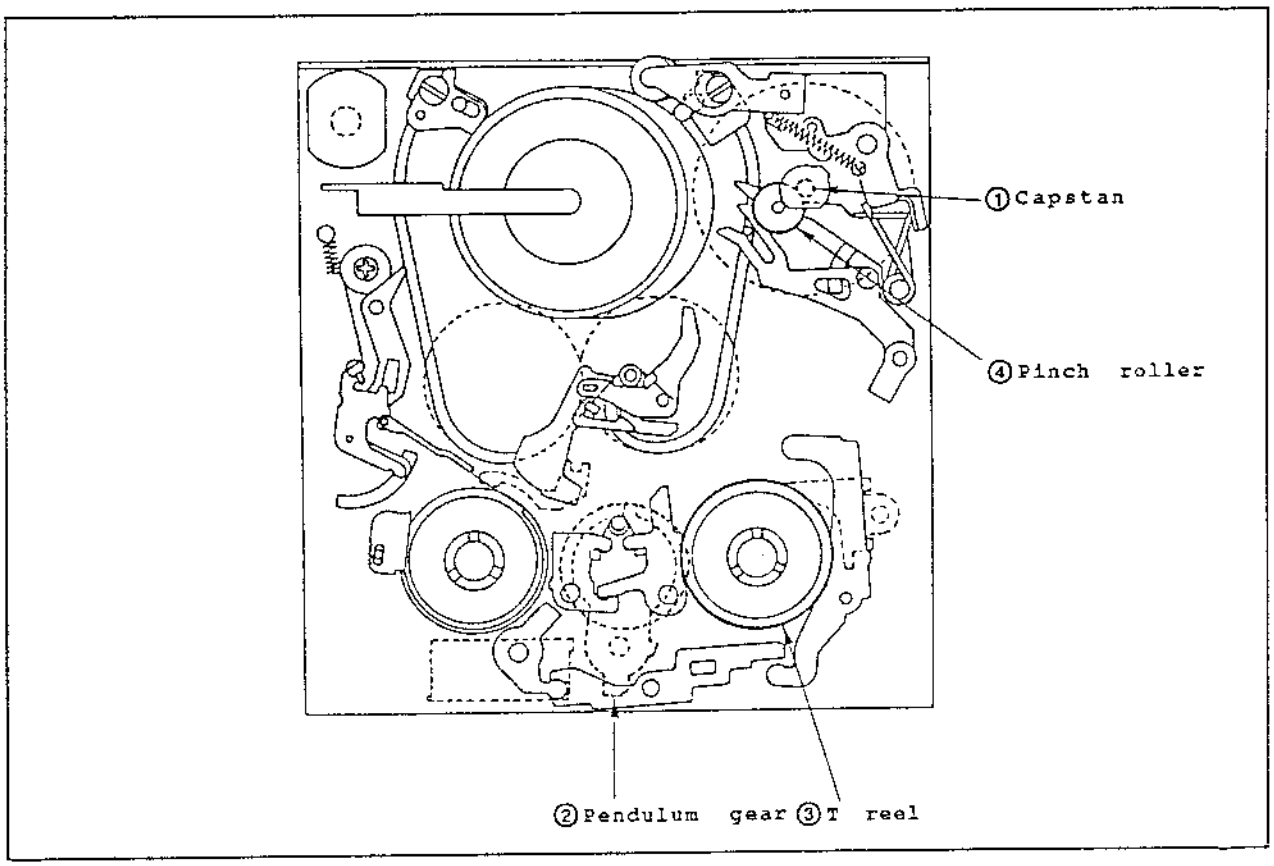
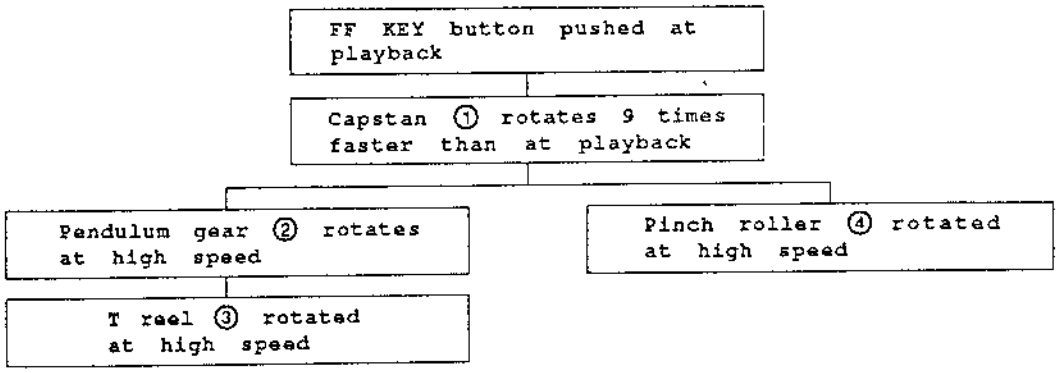


Fig.I-18

3-5 CUE


FF KEY button pushed at playback
Capstan ① rotates 9 times faster than at playback
Pendulum gear ② rotates at high speed
Pinch roller ④ rotated at high speed
T reel ③ rotated at high speed

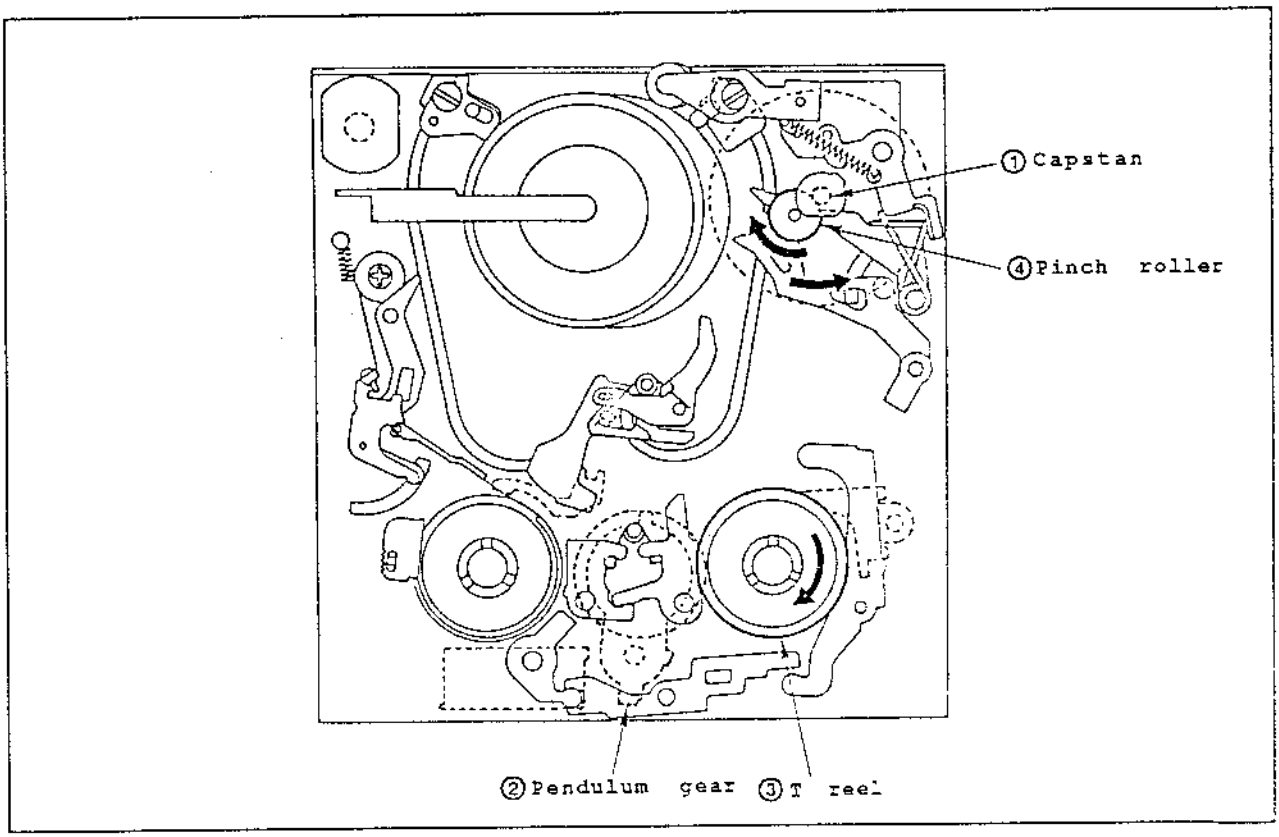


Fig.I-19

3-6 REV

REV KEY button pushed at playback

Capstan ① rotates reversely 7 times faster than at playback

Pendulum gear ② moves to be meshed with S reel ③

Pinch roller ④ rotated reversely at high speed

S reel ③ rotated at high speed

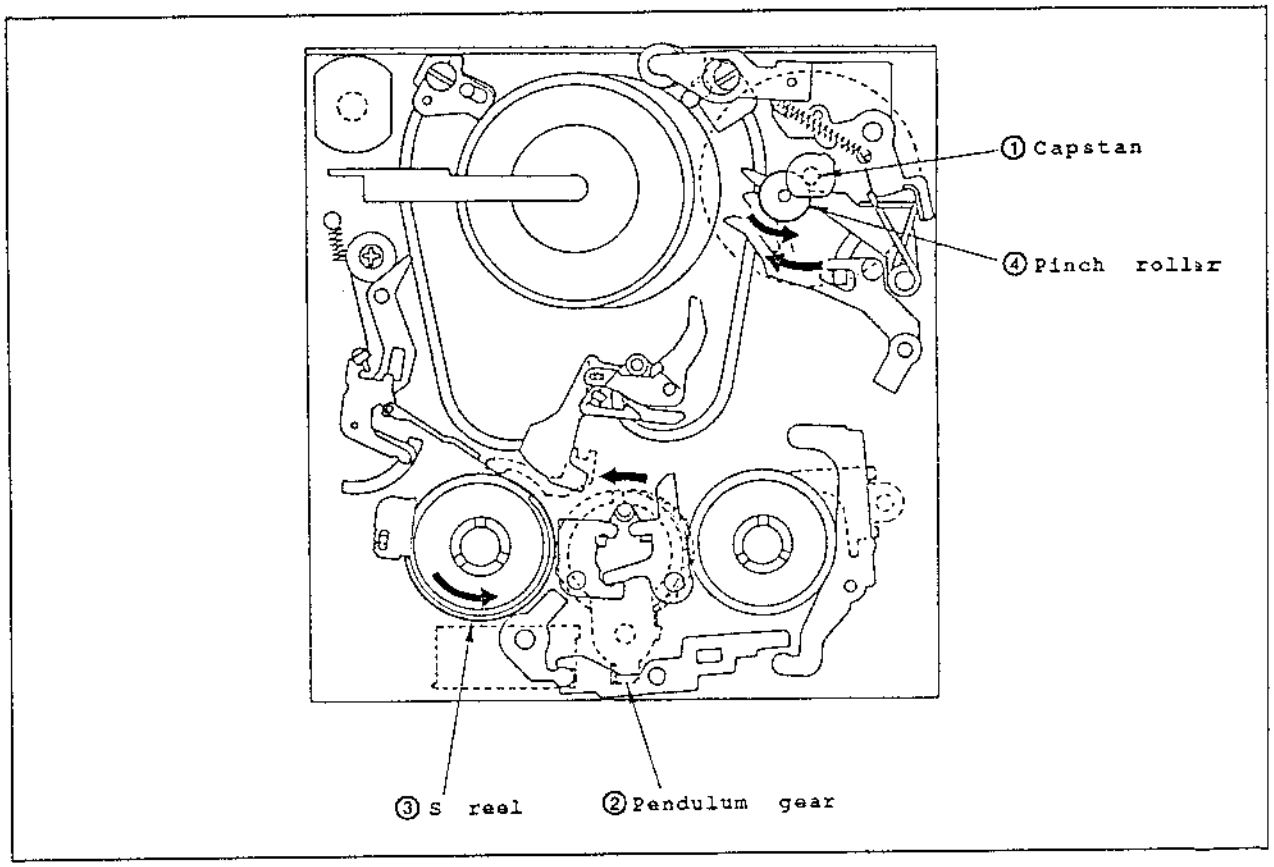
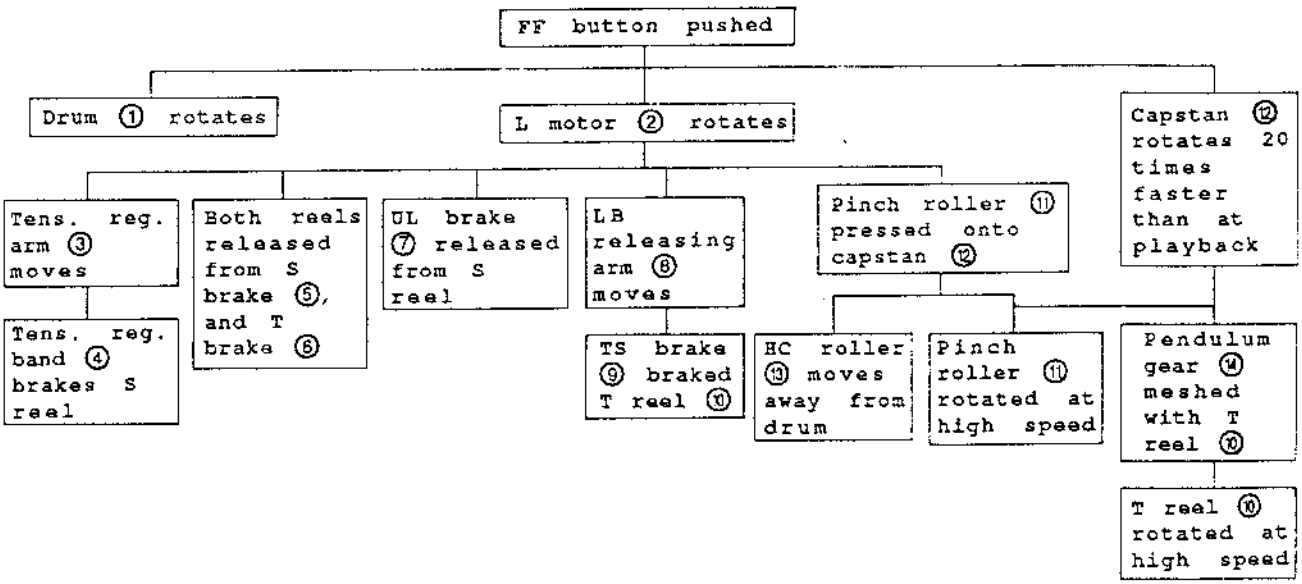


Fig.I-20

3-7 F.F


FF button pushed
Drum ① rotates
L motor ② rotates
Capstan ⑫ rotates 20 times faster than at playback
Tens. reg. arm ③ moves
Both reels released from S brake ⑤, and T brake ⑥
UL brake ⑦ released from S reel
LB releasing arm ⑧ moves
Pinch roller ⑪ pressed onto capstan ⑫
Tens. reg. band ④ brakes S reel
TS brake ⑨ braked T reel ⑩
HC roller ⑬ moves away from drum
Pinch roller ⑪ rotated at high speed
Pendulum gear ⑭ meshed with T reel ⑩
T reel ⑩ rotated at high speed

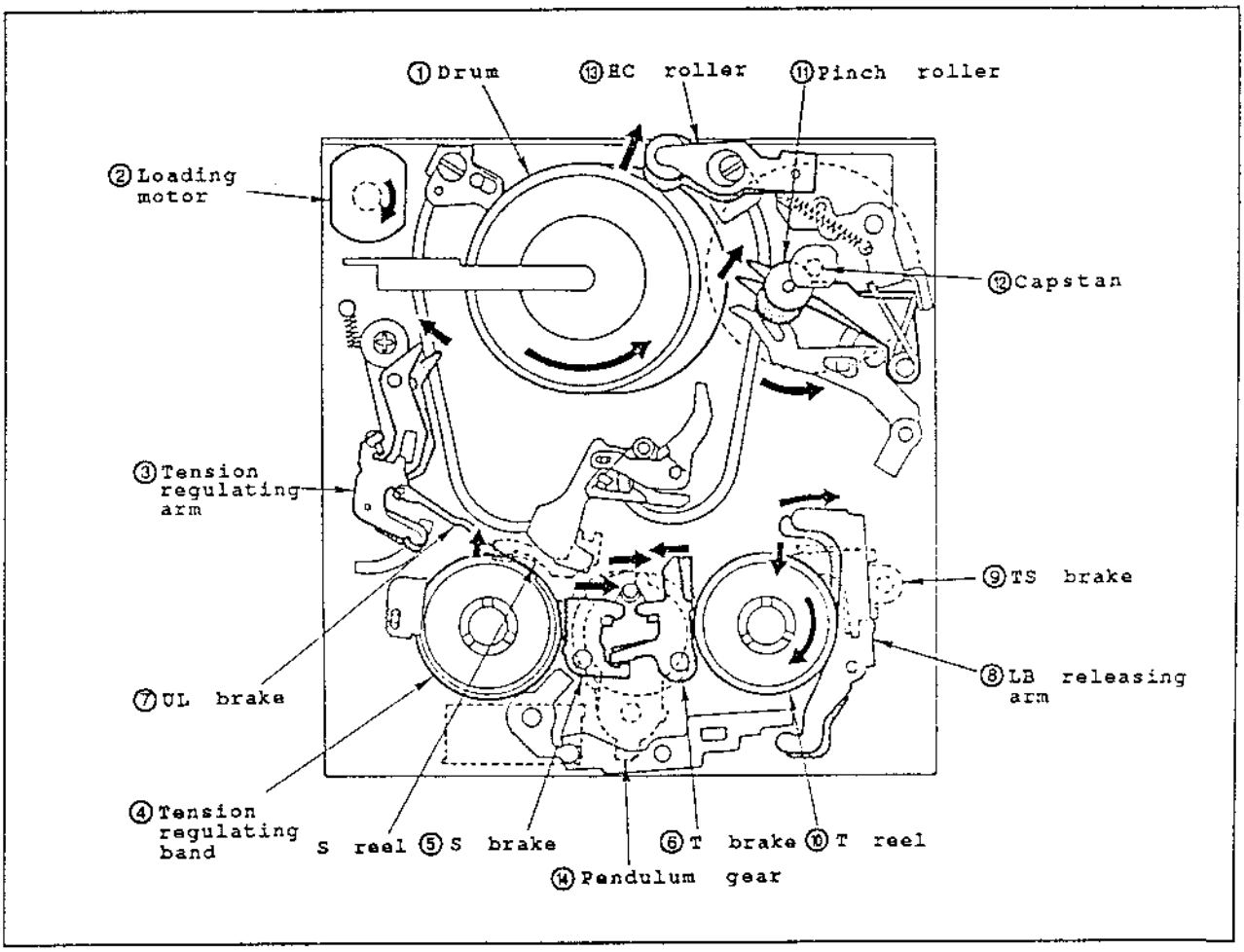
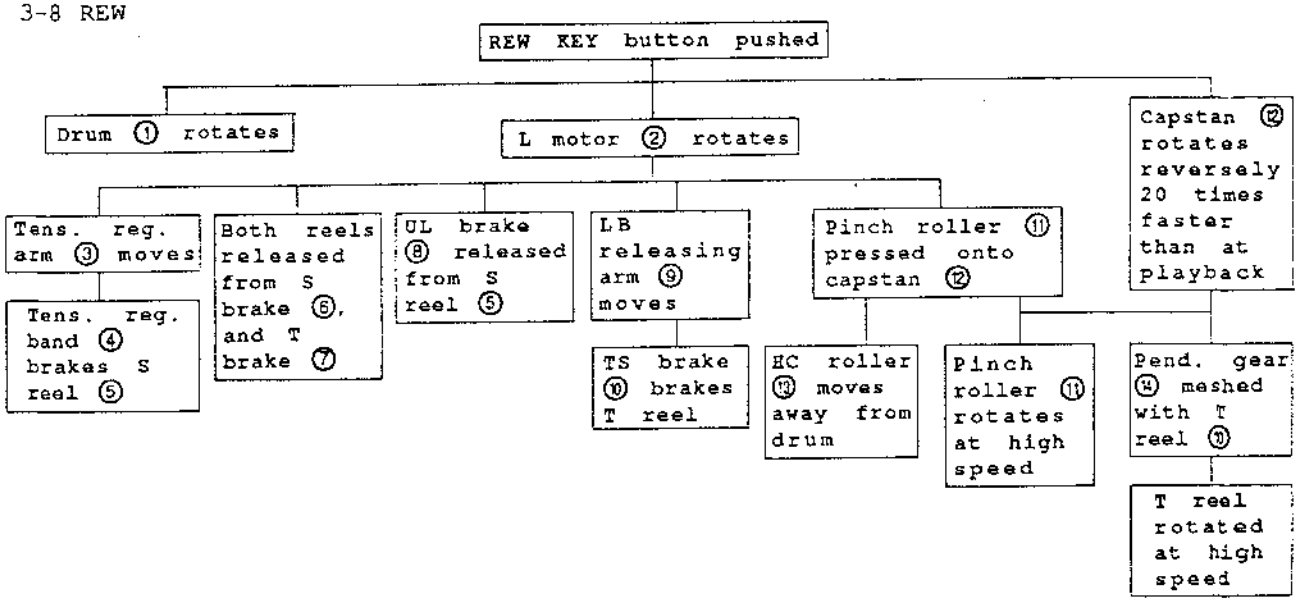

①Drum
⑬HC roller
⑪Pinch roller
②Loading motor
⑫Capstan
③Tension regulating arm
⑨TS brake
⑧LB releasing arm
⑦UL brake
④Tension regulating band
S reel ⑤S brake
⑥T brake ⑩T reel
⑭Pendulum gear

Fig.I-21

3-8 REW


REW KEY button pushed
Drum ① rotates
L motor ② rotates
Capstan ⑫ rotates reversely 20 times faster than at playback
Tens. reg. arm ③ moves
Both reels released from S brake ⑥, and T brake ⑦
UL brake ⑧ released from S reel ⑤
LB releasing arm ⑨ moves
Pinch roller ⑪ pressed onto capstan ⑫
Tens. reg. band ④ brakes S reel ⑤
TS brake ⑩ brakes T reel
HC roller ⑬ moves away from drum
Pinch roller ⑪ rotates at high speed
Pend. gear ⑭ meshed with T reel ⑪
T reel rotated at high speed

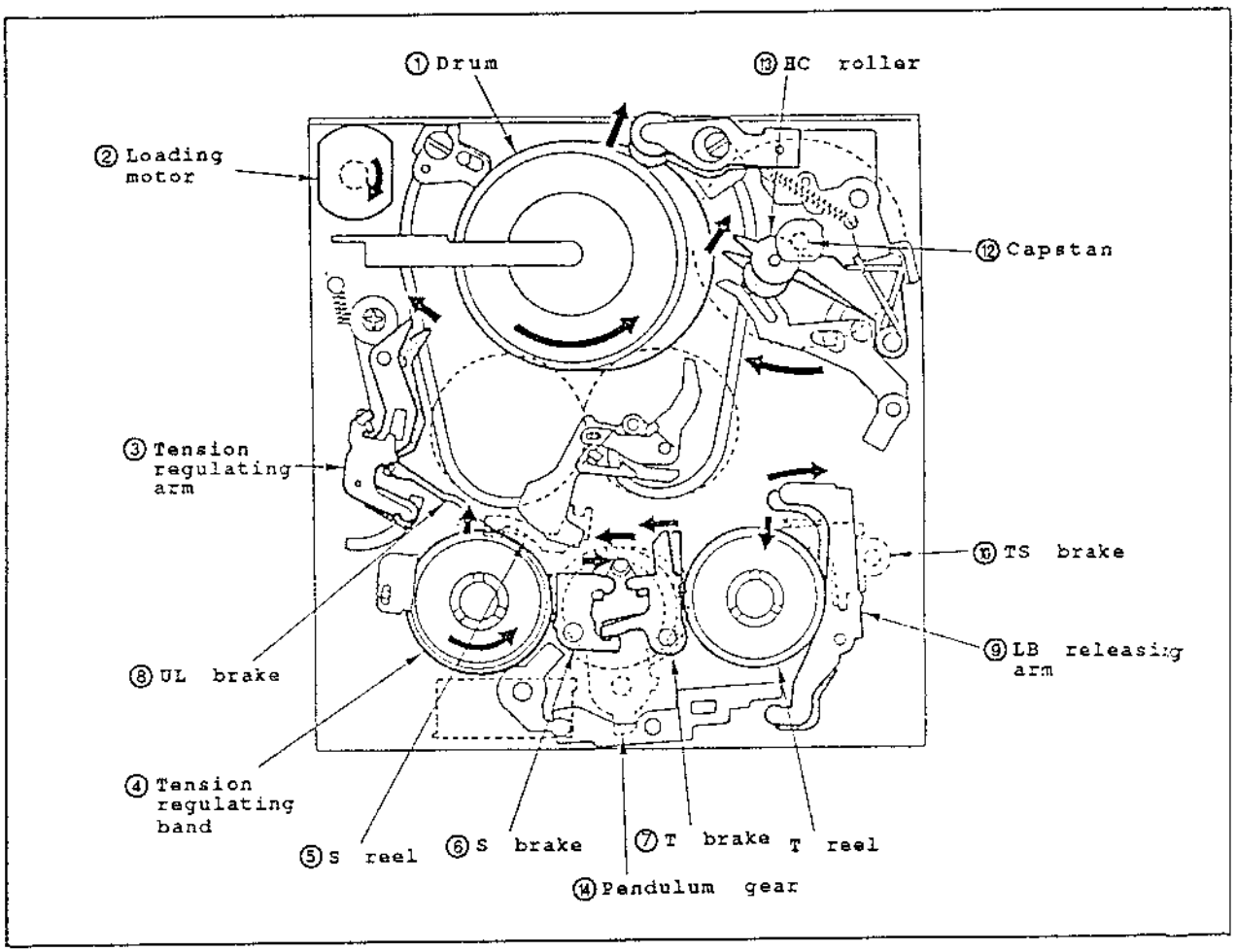
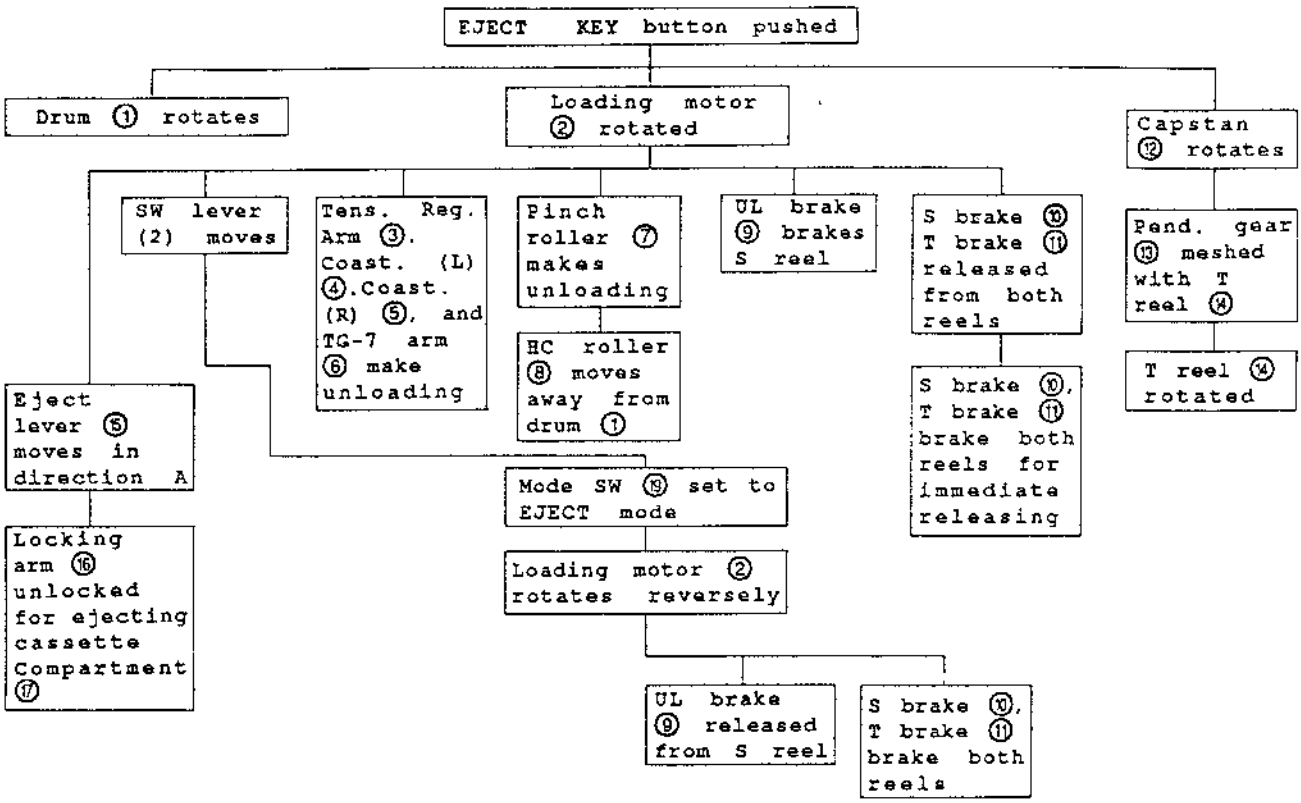


Fig.I-22

3-9 EJECT


EJECT KEY button pushed
Drum ① rotates
Loading motor ② rotated
Capstan ⑫ rotates
SW lever (2) moves
Tens. Reg. Arm ③. Coast. (L) ④. Coast. (R) ⑤, and TG-7 arm ⑥ make unloading
Pinch roller ⑦ makes unloading
UL brake ⑨ brakes S reel
S brake ⑩ T brake ⑪ released from both reels
Pend. gear ⑬ meshed with T reel ⑭
HC roller ⑧ moves away from drum ①
S brake ⑩, T brake ⑪ brake both reels for immediate releasing
T reel ⑭ rotated
Eject lever ⑮ moves in direction A
Mode SW ⑲ set to EJECT mode
Locking arm ⑯ unlocked for ejecting cassette Compartment ⑰
Loading motor ② rotates reversely
UL brake ⑨ released from S reel
S brake ⑩, T brake ⑪ brake both reels

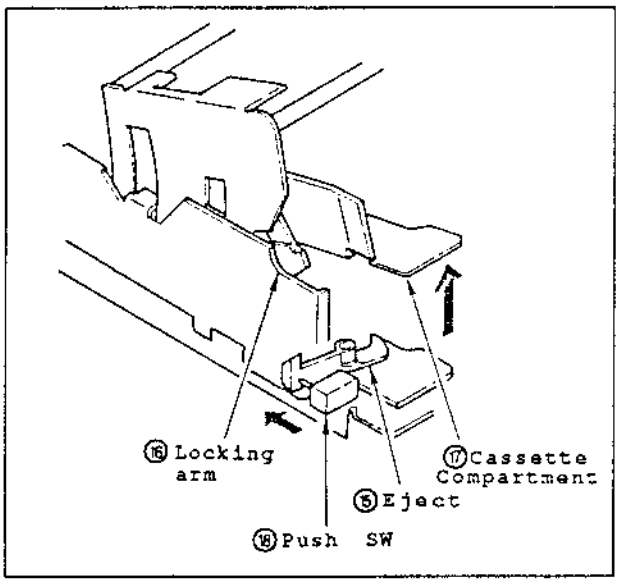


Fig.I-23

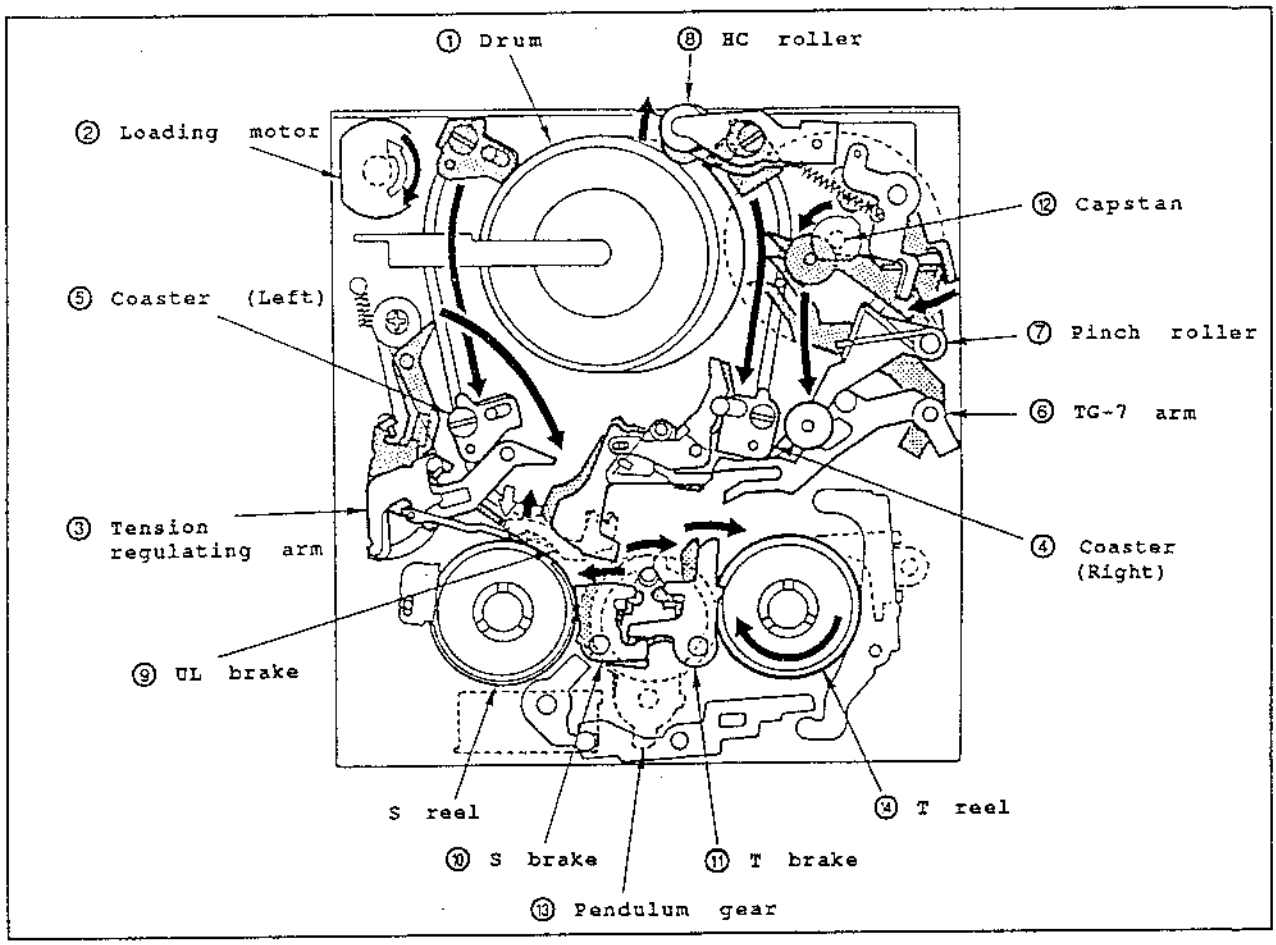

① Drum
⑧ HC roller
② Loading motor
⑫ Capstan
⑤ Coaster (Left)
⑦ Pinch roller
⑥ TG-7 arm
③ Tension regulating arm
④ Coaster (Right)
⑨ UL brake
S reel
⑭ T reel
⑩ S brake
⑪ T brake
⑬ Pendulum gear

Fig.I-24

Chapter 2 Adjustments/Replacement

1. Recorder Section Mechanical Check/Adjustment

*Note: For details, i.e. removal of covers, C.B.A.S, location of test points, etc., refer to the service manual of product which equips this mechanism.

1-1 List of Maintenance Tools and Supplies

Maintenance Tools

Description	Tool No.	Remarks
Cassette Torque Gauge for 8mm	DY9-1047-000	
Alignment Tape K (Tracking B)	DY9-1085-000	New (for NTSC)
Alignment Tape L (Tracking C)	DY9-1086-000	New (for PAL/SECAM)
Hexagonal wrench (0.89mm)		New (Commercially available)
Rotary drum jig kit		Enclosed in repair kit

Supplies

Description	Tool No.	Remarks
Lens Tissue K-1, K-3	CY9-4023-003	Camera Service Dept.
Molyton Grease	DY9-3009-000	
Hydroflud NT-68	DY9-3010-000	*See the note below
Ethyl alcohol		Commercially available

*Note: In U.S.A., contact video service Div., Canon U.S.A., Inc. for ordering.

1-2 Removal of cassette Compartment Assembly (Fig.II-1)

(1) Remove setscrews ① and ②.
(2) To detach cassette compartment assembly, slide the assembly a little toward you. (Ⓐ parts in Fig.II-1 detached)
Then take out the assembly.

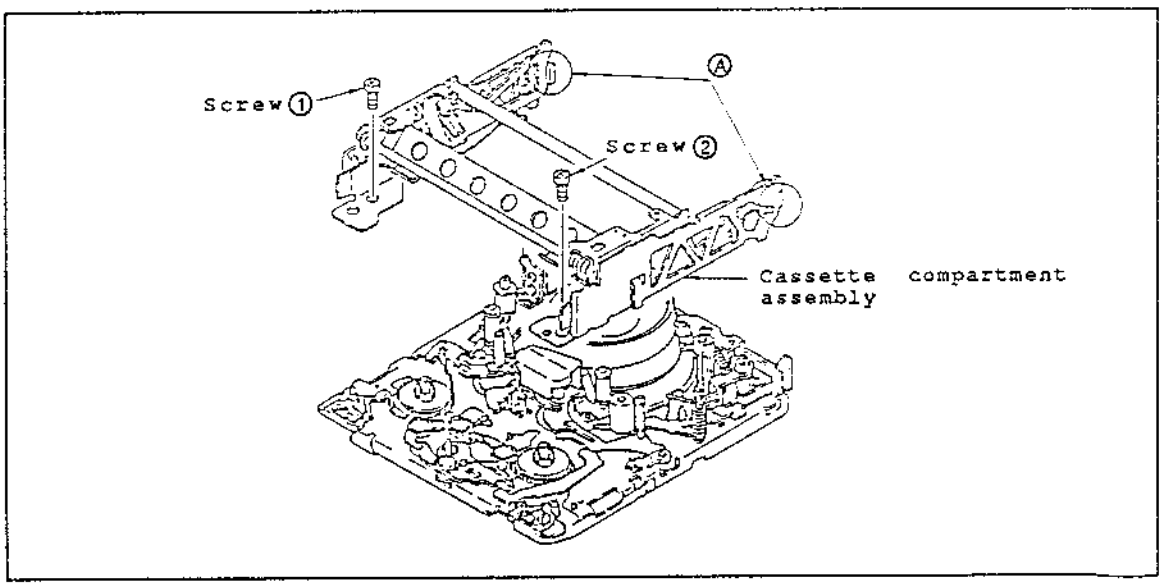


Fig.II-1

1-3 Tape Loading/Play without LS cassette Compartment Assembly and Tape

*Note: Remove a strong light source when performing the followings.
If performed near the strong light source, a tape sensor misoperated.

1-3-1 Loading (Fig.II-2)

(1) Cover a tape sensor LED with an opaque cap ① or equivalent.
(2) To press a pin, attach a tape onto the Recog. switch ②.
(3) Move the Eject lever ③ in the direction of Ⓐ.

1-3-2 Play (Fig. II-2)

(1) Set loading state.
(2) Snap a rubber band ④ around the S and T reels.
(3) To rotate T reel, push the play Key Switch.
When the tape starts moving, push the tension regulating arm ⑤ in the direction of Ⓑ. (At this time, the tension regulating band is released, and the S reel moves.)

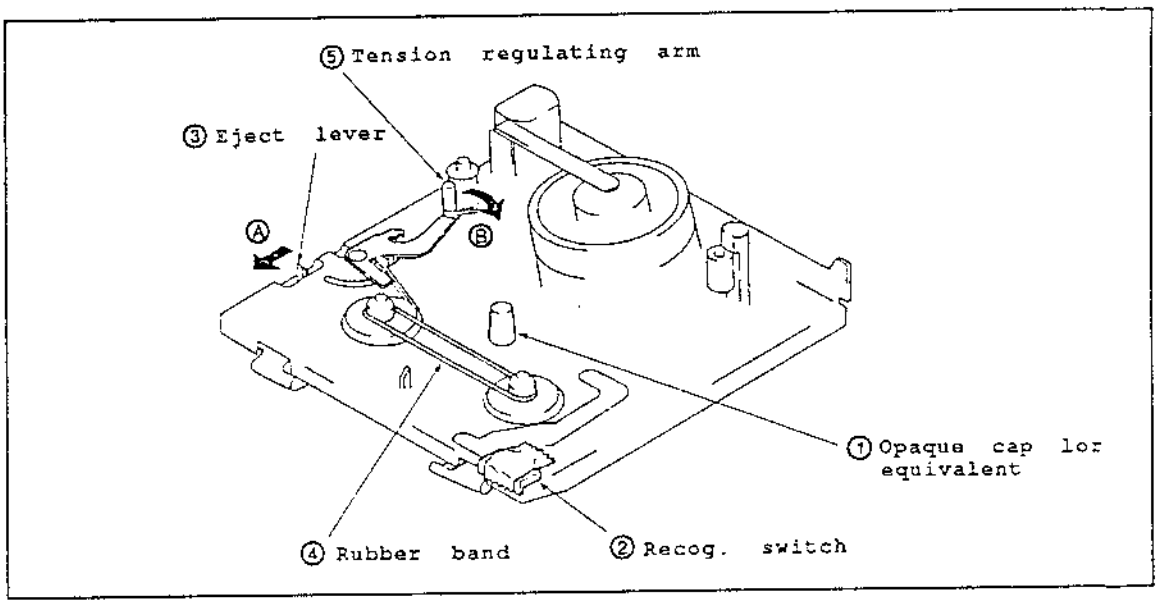


Fig.II-2

1-4 Independent Operation of Mechanism Section

*Note: Perform this operation when the C.B.A.S are removed.

(1) To expose the terminals, remove the tape from the upper part of loading motor. (Fig.II-3)
(2) Supply 3V (approx.) to the terminals of loading motor ① from the constant voltage supplier.
(3) For confirming the mechanical modes, use the output of slide switch ② (mode switch). (Fig.II-4, Table II-1).

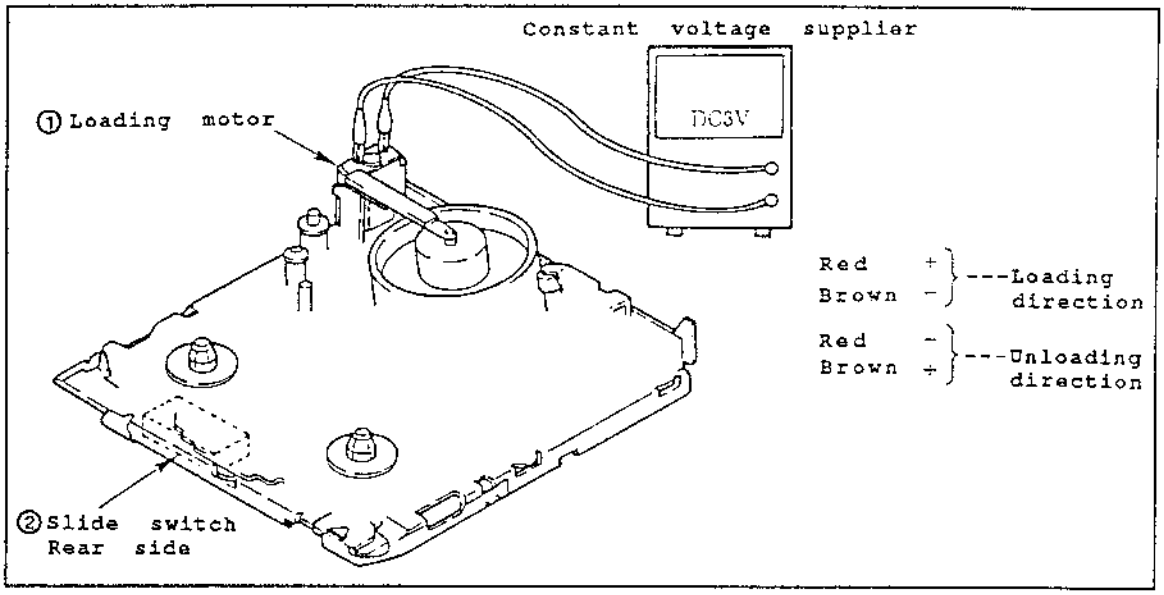


Fig.II-3

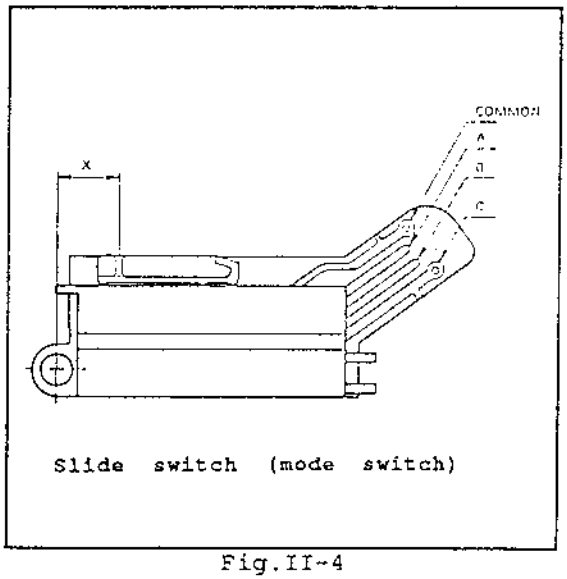


Fig.II-4

Modes	X (mm)	A	B	C
Eject	1.7-2.7	opened	opened	shorted
Blank	2.7-5.7	opened	opened	opened
Load/Unload	5.7-6.7	opened	shorted	shorted
Blank	6.7-8.1	opened	shorted	opened
Stop	8.1-9.1	shorted	shorted	opened
Blank	9.1-12.0	shorted	opened	opened
Play	12.0-13.3	shorted	opened	shorted

Note: "Opened" and "shorted" in the table is versus the COMMON.

Table II-1

2. Periodic Check/Confirmation and Notes for Each Mechanism

To maintain the performances of equipment and tape properly, perform the following checks periodically. Also, after repairing,confirm the followings regardless of the length of use hours.

• Cleaning

2-1 Rotary Drum

(1) Clean the rotary drum gently with a thick lens tissue (CY9-4023-003) with ethyl alcohol wetted.
When cleaning, rotate the rotary drum counterclockwise gradually by hand.

*Notes: 1. Do not rotate the motor by using the power source.
2. Do not rotate the drum clockwise.
3. Do not clean the drum except the above procedure.
If the lens tissue with ethyl alcohol soaked is used vertically to head chip, the head chip may be damaged.

2-2 Tape Path

(1) Clean the tape path (No.1-7 guides, Capstan shaft and Pinch roller) by using a lens tissue with ethyl alcohol soaked. (Fig.II-5)

2-3 Driving System (Timing belt, surface of reel table)

(1) Clean the timing belt and the reel table by using a lens tissue with ethyl alcohol soaked.

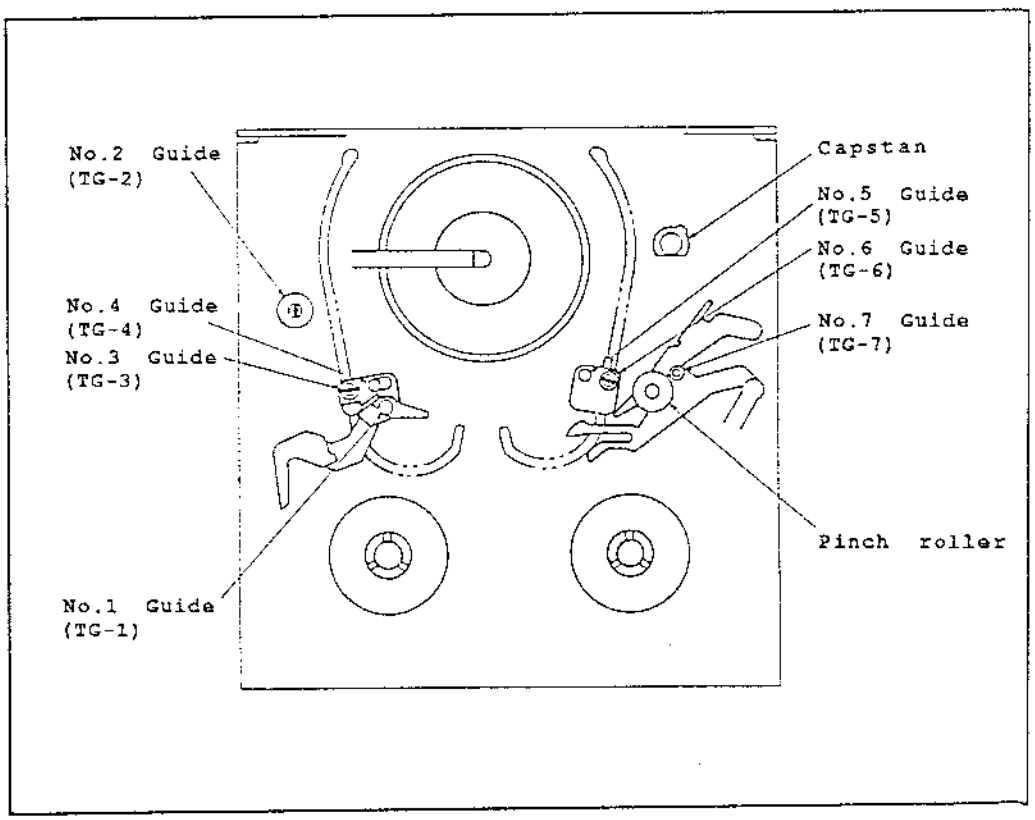


Fig.II-5

2-4 Periodic Check/Confirmation Items

When performing periodical Check/Confirmation, refer to the following items.

Check/Conformation items		Hours of Use(H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Drum/ Tape Path	Cleaning of tape path surfsce	○	○	○	○	○	○	○	○	○	○	Be careful for oil
	Cleaning of rotary drum assembly	○	○	○	○	○	○	○	○	○	○	Be careful for oil
Driving Systems	Relay belt	—	☆	—	☆	—	☆	—	☆	—	☆	
	Capstan shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Be absolutely careful not to put oil on the tape path surface.
	Relay pully shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	
Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD.RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

Oil and Grease

(1) "One drop of oil" means the amount which sticks to a 2mm diameter rod, as shown in Fig.II-6.
(2) Use oil and grease specified below.
Molyton grease DY9-3009-000
Hydroflud-NT68 Commercially available (DY9-3010-000).
(3) For a shaft receiver, be sure to use the oil without dust particles, etc. If the oil with such substances used, a shaft receiver may be damaged by friction, etc..

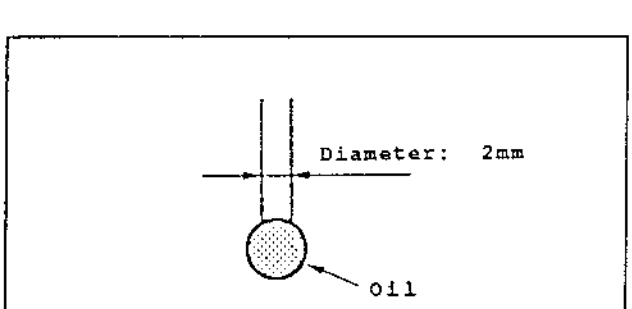


Fig.II-6

3 Disassembling/Adjustment for Mechanical Section

3-1 Roller Assembly

- Disassembling (Fig.II-7)

  (1) To dismount the roller assembly ②, removes a screw ①.

- Reassembling (Fig.II-7)

  (1) Install the roller assembly while aligning the two dowels with the two holes ④ at mechanical chassis.
  (2) Secure the roller assembly ② with a screw ①.

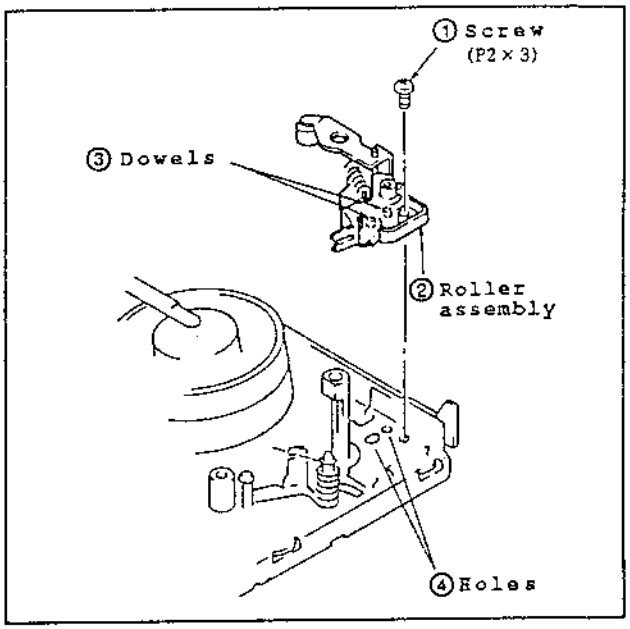


Fig.II-7

3-2 Guide Guard

- Disassembling (Fig.II-8)

  (1) To detach the guide guard, remove a screw ①.

- Reassembling (Fig.II-8)

  (1) Install the guide guard while aligning the dowel ③ with the hole ④.
  (2) Secure the guide guard ② with a screw ①.

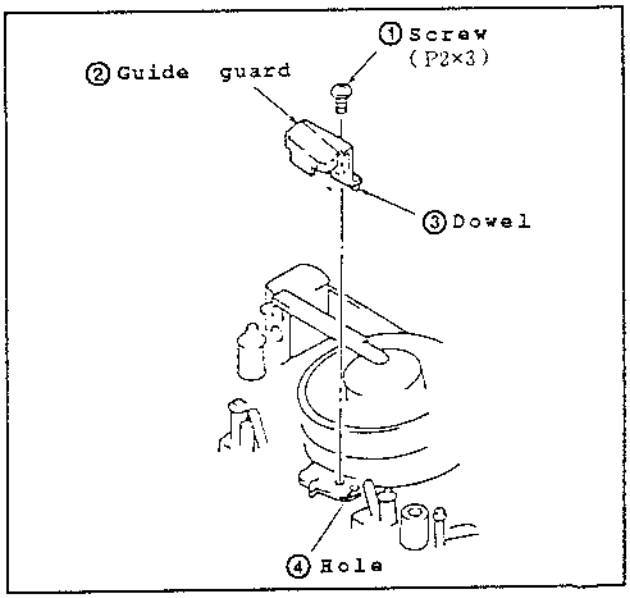


Fig.II-8

3-3 Capstan Motor

• Disassembling (Fig.II-9)

(1) Set the unloading state.
(2) Rotate the stopper ① in direction Ⓐ until it comes to an end.
(3) To take out the capstan motor ③, remove the two set screws ②.

• Reassembling (Fig.II-9)

(1) Align the two dowels ④ with the two holes ⑤ to match the gear section ⑥ with the connecting gear ⑦.
(2) Secure the capstan motor ③ with the two set screws ②.
(3) Rotate the stopper ① in direction of Ⓑ until it comes to an end.

*Notes: 1. Do not match the gear section ⑥ and the connecting gear ⑦ forcibly to prevent the cam grooves damaging.
2. Fit the capstan motor ③ and the chassis without space.
3. Do not touch the capstan motor shaft, the rotor section and the oil seals.

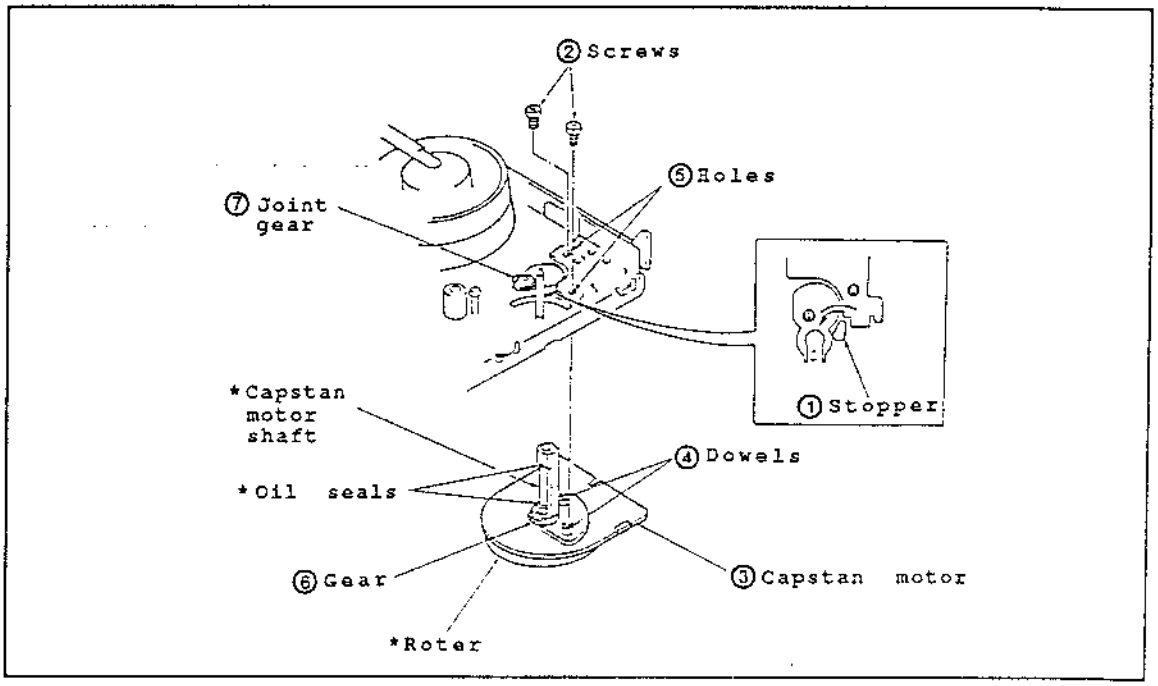


Fig.II-9

3-4 S Brake, T Brake

• Disassembling (Fig.II-10)

(1) Remove the spring ①.
(2) To take out the T brake ③, remove the shaft pin ②.
(3) To take out the S brake ⑤, remove the shaft pin ④.

*Note: If the claw part of shaft pin ② and ④ damaged, replace them.

• Reassembling (Fig.II-10)

(1) Install the S brake ⑤ while inserting the gear ⑥ into the notch ⑦.
(2) Attach the shaft pin ④.
(3) To install T brake ③, put the shaft ⑧ of T brake ③ into the S reel side comparing the brake releasing arm ⑨. At this time, part Ⓐ must be at the drum side comparing part Ⓑ.
(4) Attach the shaft pin ②.
(5) Insert the spring ① under the claw ⑪ of shaft ⑩.
Hook the spring ① on the claws ⑫, respectively.

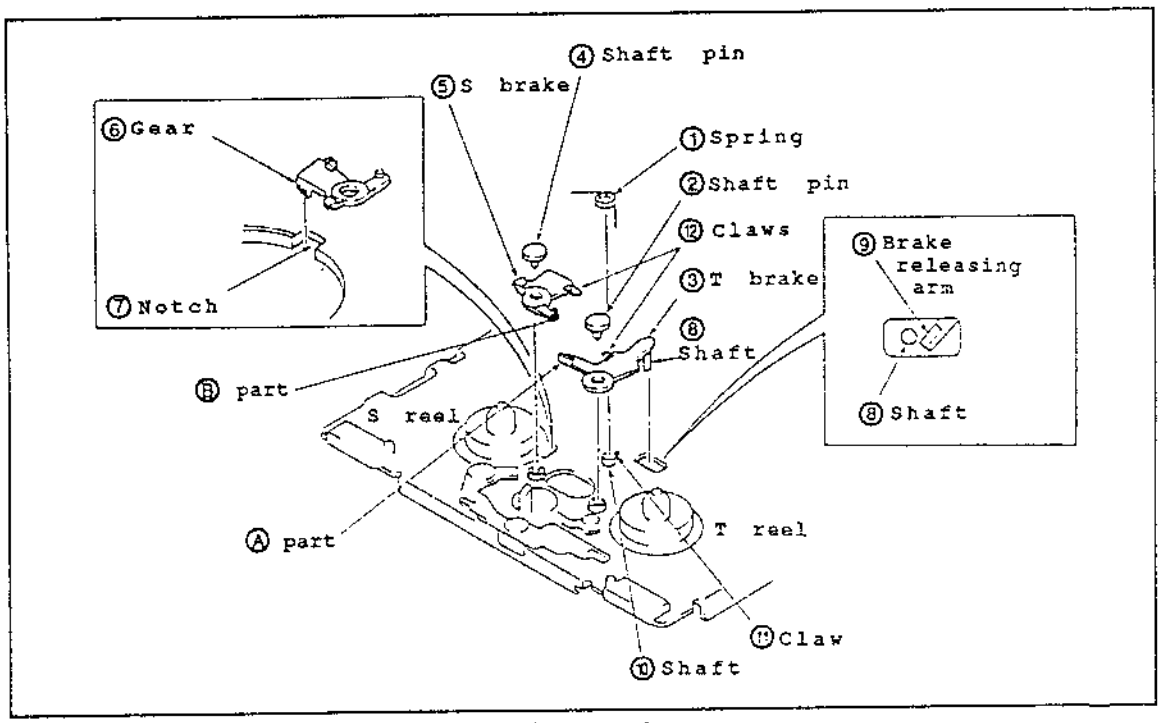


Fig.II-10

3-5 LB Brake, LB Lever

• Disassembling (Fig.II-10)

(1) To take off the TL plate ②, remove the screw ①.
(2) To take off the LB brake ④, remove the shaft pin ③.
(3) To take off the LB lever ⑥, remove the shaft pin ⑤.

*Note: If the claw part of shaft pin ③ and ⑤ damaged, replace them.

• Reassembling (Fig.II-11)

(1) Assemble the LB lever ⑥ while inserting the LB gear pin ⑦ to the hole of LB lever ⑥. Then, secure it with the shaft pin ⑤.
(2) Assemble the LB brake ④ while inserting the pin ⑧ to the notch ⑨ of LB lever ⑥ and the gear ⑩ to the notch ⑪.
(3) Install the shaft pin ③.
(4) Assemble TL plate ② while aligning the dowel ⑫ and the hole ⑬. Then, secure it with the screw ①.

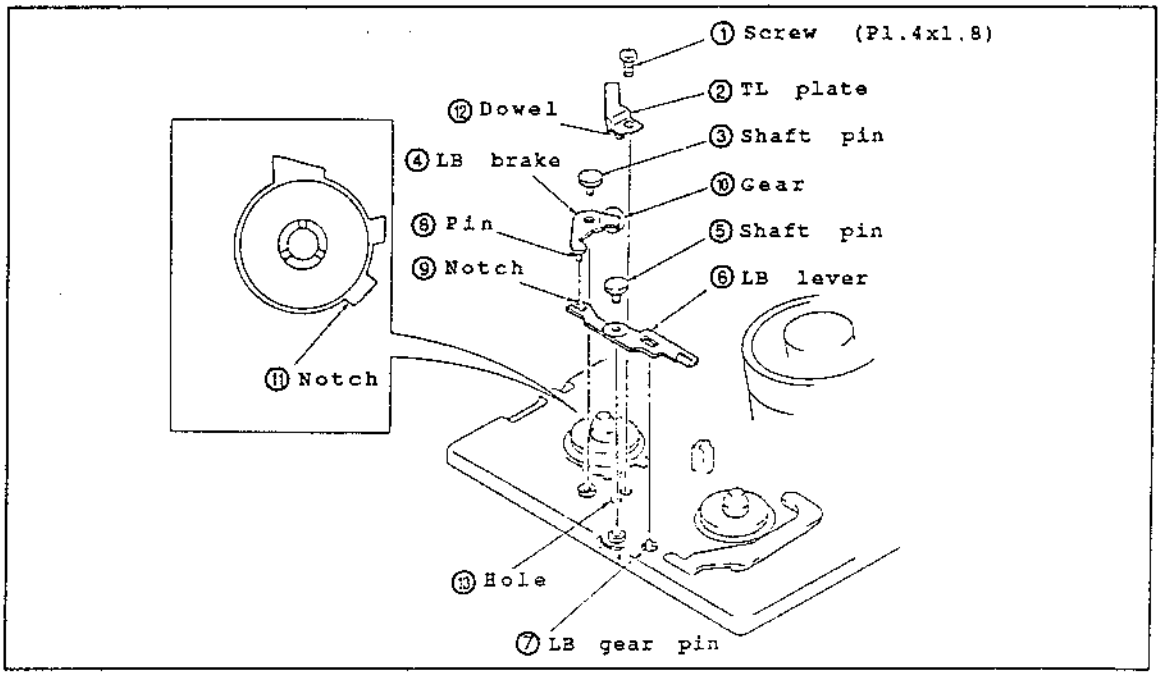


Fig.II-11

3-6 LB Releasing Arm

• Disassembling (Fig.II-12)

(1) Take off the LB releasing arm ② while pushing the claw ① in the arrow direction.

• Reassembling (Fig.II-12)

(1) Install the LB releasing arm ② to the shaft ③ while inserting ⓐ, ⓑ, ⓒ and ⓓ to the holes ④, respectively.
Then, secure it by hooking the claw ①.

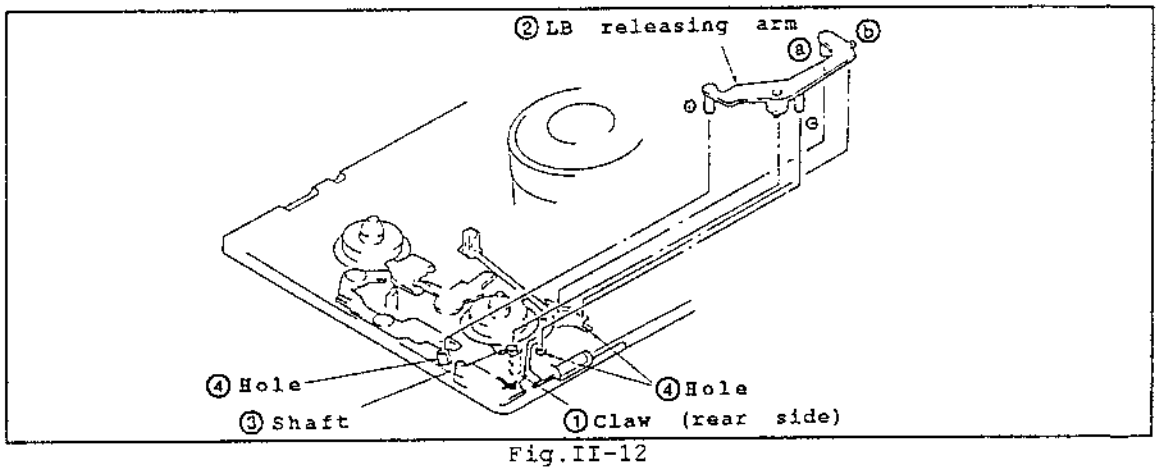


Fig.II-12

3-7 RK Stopper, RK Stopper Arm

• Disassembling (Fig.II-13)

(1) Remove the screw ①.
(2) To take off the RK stopper arm ③, unhook the claw ② of chassis.
(3) Take off the RK stopper ④.

• Reassembling (Fig.II-13)

(1) Assemble the RK stopper ④ onto the shaft ⑤.
(2) Assemble RK stopper arm ③ onto the shaft ⑥ while inserting the pin ⑩ to the hole ⑪.
Then, secure it by hooking the claw ② to the hole ⑦.
(3) Install the spring ① to the shaft ⑤.
Then, hook it to the claws ⑧ and ⑨, respectively.

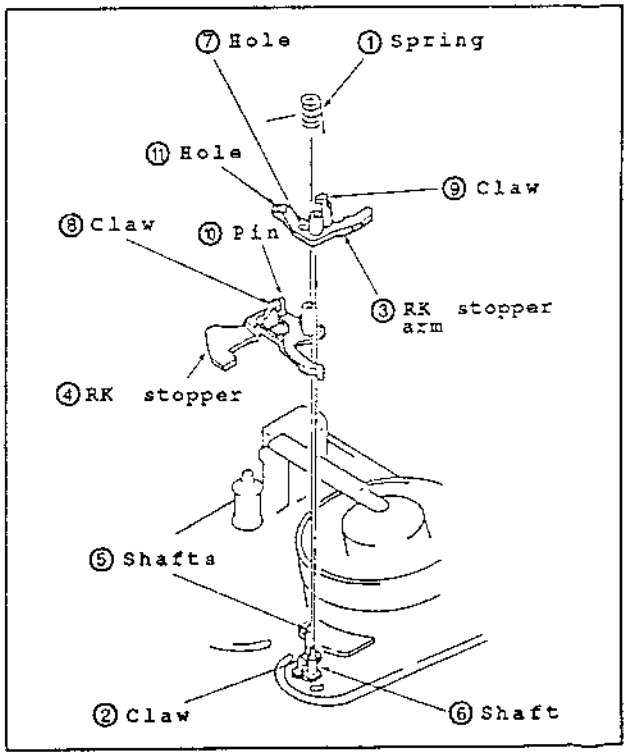


Fig.II-13

3-8 Pinch Arm, TG-7 Arm

• Disassembling (Fig.II-14)

(1) Set the unloading state.
(2) To take off the pinch arm ②, remove the washer ①.
(3) To detach the TG-7 plate spring ⑤, bend the claw ④ of hole ③ by using a thin screwdriver or equivalent.
(4) Detach the TG-7 arm.

• Reassembling (Fig.II-14)

(1) Apply the grease on the inside and the bottom surface of the hole ⑦.
(2) Insert the shaft ⑧ of TG-7 arm ⑥ to the hole ⑦.
(3) Apply the grease on the shadowed area ⓐ. (Fig.A)
(4) Insert the TG-7 plate spring ⑤ to the hole ③.
Then, secure it by hooking the claw ④.
(5) Apply the 1/2 drop of oil to the shaft ⑨.(Fig.B)
(6) Insert the pinch arm ② to the shaft ⑨.
Then, assemble while inserting the pinch sub-arm's cut-up part into the ⓑ part.
(7) Secure it with the washer ①.

* Notes:1. Do not apply the grease on the screw ⑪ of TG-7 arm ⑥. (Fig.A)
2. Be careful for the TG-7 guide and the rubber part when inserting.
3. After reassembled, be sure to perform the tape path adjustment.

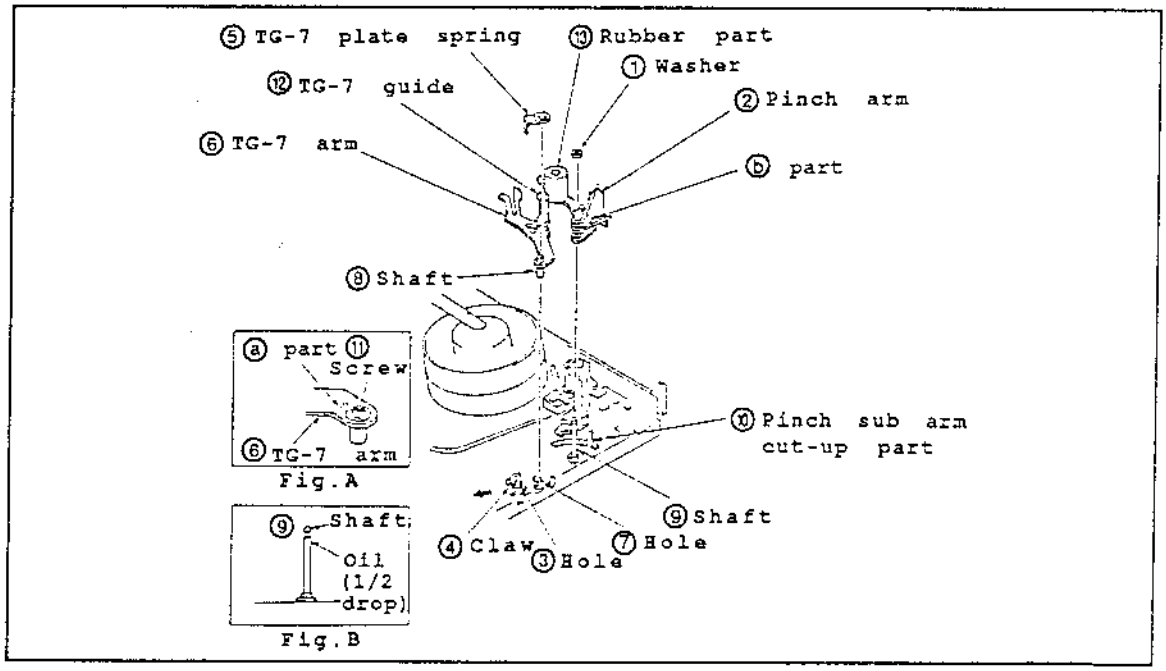


Fig.II-14

3-9 TG-2

- Disassembling (Fig.II-15)

(1) Take out the TG-2 upper flange ①.
(2) Take out the TG-2 roller ②, TG-2 sleeve ③, TG-2 lower flange ④ and the coil spring ⑤.

- Reassembling (Fig.II-15)

(1) Install the coil spring ⑤, TG-2 lower flange ④, TG-2 sleeve ③ and TG-2 roller ② to the shaft.
(2) Secure the TG-2 upper flange ① to the shaft by turning it four to 6 times.

- Presetting (Fig.II-16)

(1) Turn the TG-2 upper flange ① to adjust the height between the mechanical chassis surface and the TG-2 upper flange to 18.6mm.

*Note: After presetting, perform the tape path adjustment.

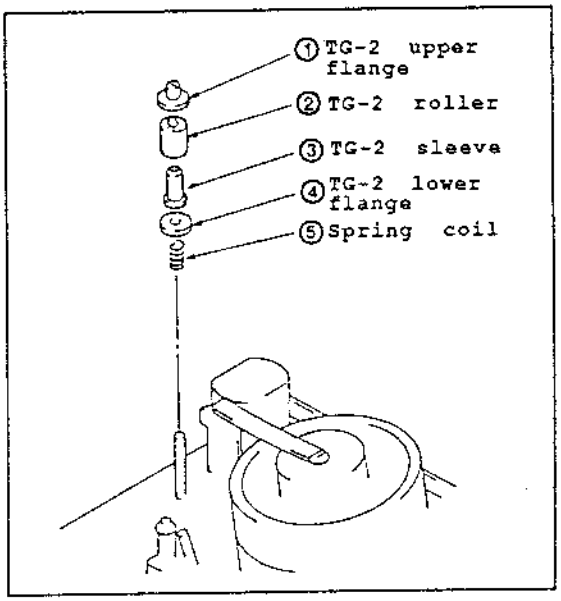


Fig.II-15

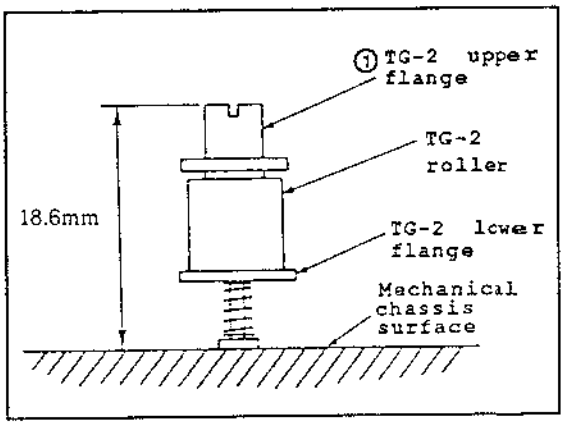


Fig.II-16

3-10 S Reel Table, T Reel Table

• Disassembling (Fig.II-17)

(1) In the same procedures in "3-4", dismount the S and T brake.
(2) In the same procedures in "3-5", detach the TL plate.
(3) In the same procedures in "3-11", take off the tension regulator band.
(4) Dismount the S reel table ①.
(5) Turn the stopper ② in the direction of Ⓐ by 90° approximately.
(6) While shifting the LB releasing arm ③ in the direction of Ⓑ, dismount the T reel table.

• Reassembling (Fig.II-17)

*Caution: When mounting S and T reel tables, be careful not to drop the oil onto the reflection plate at the rear side. If the oil dropped, dust particles may put on and it makes the counter inaccurate.

(1) Apply the 1/2 drop of oil to the shaft ⑤. (Fig.A)
(2) Rotate RK gear ⑥ to the direction of Ⓒ.
Rotate the TS brake ⑦ to the direction of Ⓓ.
(3) While shifting the LB releasing arm ③ to the direction of Ⓑ, mount the T reel table ④ to the shaft ⑤.
Then, turn the stopper ② to the direction of Ⓕ until it comes to an end.
(4) Apply the 1/2 drop of oil to the shaft ⑧. (Fig.B)
(5) Rotate the RK gear ⑥ to the direction of Ⓕ.
Rotate the UL brake ⑨ to the direction of Ⓖ.
Rotate the LB brake ⑩ to the direction of Ⓗ.
(6) Mount the S reel table to the shaft ⑧.
(7) In the same procedures in "3-11", hook up the tension regulator band.
(8) In the same procedures in "3-5", attach the TL plate.
(9) In the same procedures in "3-4", mount the S brake and T brake.

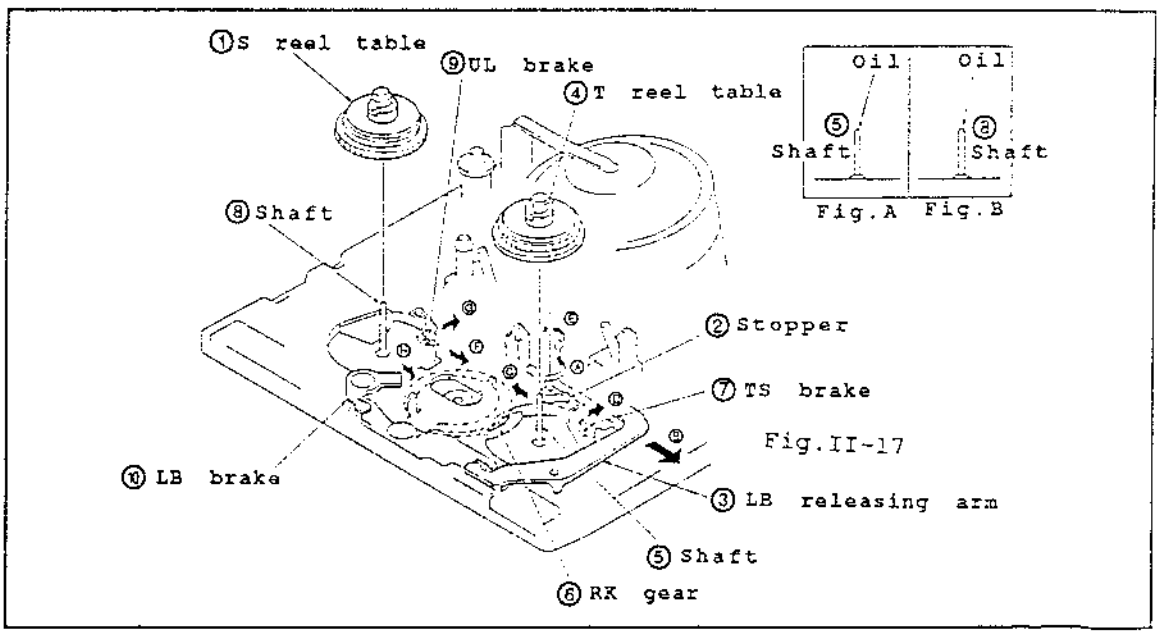


Fig.II-17

3-11 Tension Regulator Band/Arm

• Disassembling (Fig.II-18)

(1) In the same procedures in "3-5", detach the TL plate.
(2) Remove the screw ①.
(3) Take off the tension regulator band from the shaft ③ of tension regulator arm ② by using a thin screwdriver or equivalent.
(4) Remove the spring coil ⑤.
(5) Remove the washer ⑥ from the rear side of mechanical chassis. Then, detach the tension regulator arm ②.
(6) To detach the adjust arm ⑧, unhook the claw ⑦.

*Note: When detaching the tension regulator band ④, be careful not to twist or fold it. Also, when detaching it, do not touch the felt side ⑨ and drop the oil.

• Reassembling (Fig.II-18)

(1) Mesh the adjust arm ⑧ with the position indicated in the Fig. A, then, hook the claw ⑦.
(2) Apply the 1/2 drop of oil to the hole ⑩.
(3) Attach the tension regulator arm ② to the slot ⑪ while inserting ⓐ part inside of switch lever a'ssy. (Ⓐ indicated by an arrow.) (Fig.B)
(4) While pressing the tension regulator arm ② from the front side of chassis, secure it with a washer ⑥ from the rear side.
(5) Hook the spring coil ⑤ to the adjust arm ⑧ and the tension regulator arm ②, respectively. The direction of coil is as indicated in the Fig.
(6) Attach the tension regulator band ④ to the shaft ③ of the tension regulator arm ② while fitting the felt side ⑨ onto the shadow area of S reel table ⑫.
(7) Assemble the tension regulator plate ⑬ of the tension regulator band ④ while aligning it with the dowel ⑭ of chassis. Then, secure it with the screw ①.
(8) In the same procedures in "3-5", attach the TL plate.
(9) In the same procedures in "3-21", perform the tension regulator adjustment.
(10) In the same procedures in "3-22", perform the back tension adjustment.

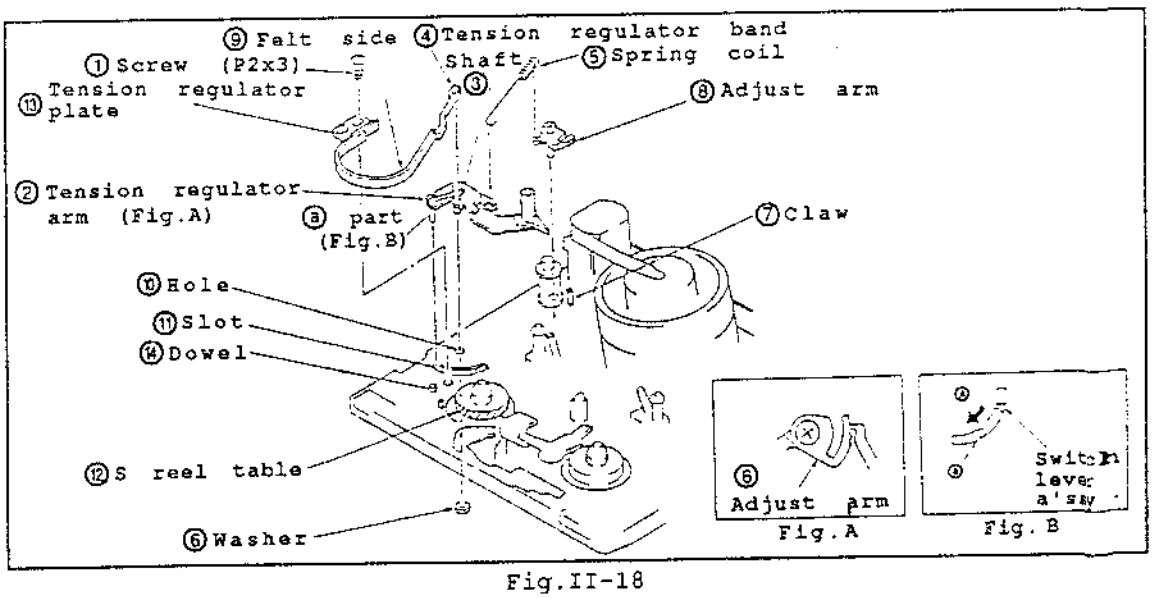


Fig.II-18

3-12 Drum Unit, Dew Sensor

• Disassembling (Fig.II-19)

(1) Set unloading state.
(2) Unplug the flexible connector ① and the connectors ②.
(3) In the same procedures in "3-2", detach the guide guard.
(4) To detach the earth terminal ④, remove the screw ③.
(5) To dismount the drum ⑥ from the chassis, remove the three setscrews ⑤.
(6) Disconnect the connector ⑩.
(7) To detach the dew sensor ⑧, remove the screw ⑦.

• Reassembling (Fig.II-19)

(1) Mesh the ⓐ part of dew sensor ⑧ with the notch ⑪. Then, secure them with the screw ⑦.
(2) Attach the connector ⑩.
(3) Put the harness ⑮ of dew sensor ⑧ under the claw ⑯. (Fig.A)
(4) Insert the connectors ② and the flexible connector ① into the chassis' hole ⑫.
Then, mount the drum while aligning the dowels ⑬, and secure it with the screws ⑤.
(5) While aligning the earth terminal ② with the chassis' two dowels ⑭, secure it with the screw ③.
(6) In the same procedures in "3-2", attach the guide guard.
(7) Attach two connectors ② and the flexible connector ① to the C.B.A..

*Notes: 1. Be careful not to flaw the head chip ⑨ and the tape path surface of drum ⑥.
2. After reassembling, perform the tape path adjustment.

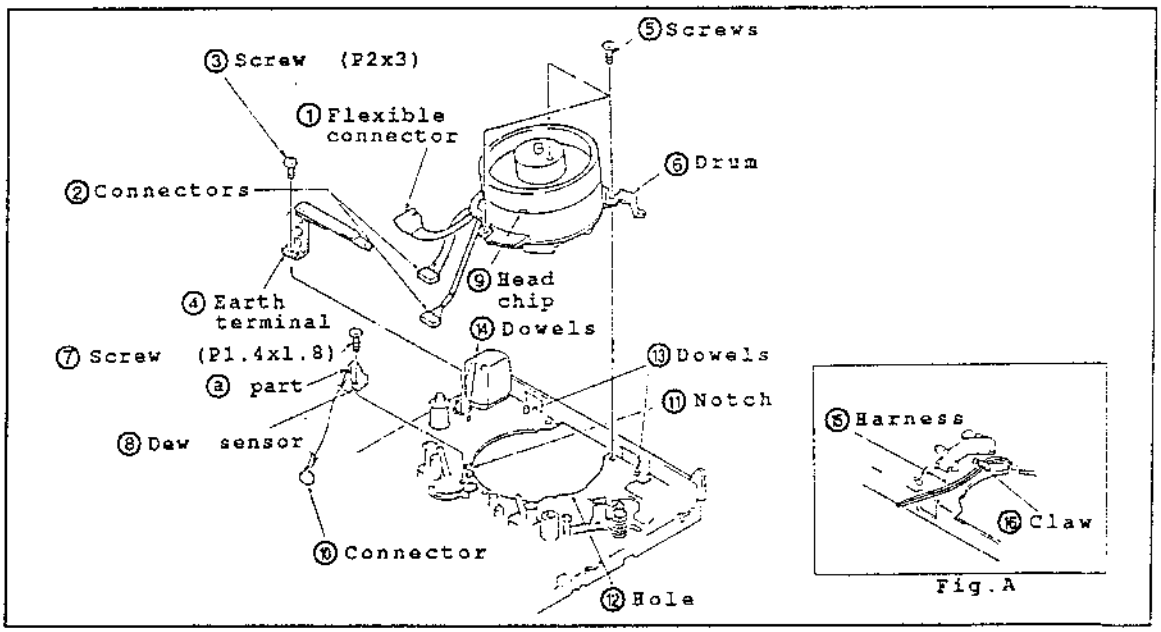


Fig.II-19

3-13 Eject Lever, Switch Lever, Pinch Sub Arm

• Disassembling (Fig.II-20)

(1) Set unloading state.
(2) In the same procedures in "3-3", dismount the capstan motor.
(3) To dismount the eject lever ②, unhook the claw ①.
(4) To detach the switch lever ④, remove the washer ③.
(5) Remove the spring ⑤.
(6) To detach the pinch sub arm ⑦, remove the washer ⑥.

• Reassembling (Fig.II-20)

(1) Apply the grease onto the shaft ⑧. (Fig.A)
(2) Assemble the pinch sub arm ⑦ while inserting the ⓐ part into the slot ⑨.
(3) Secure it with the washer ⑥.
(4) Hook the ⓑ part of spring ⑤ between the claw ⑫ and the chassis side while hooking ⓒ part to the claw ⑫.
(5) Apply 1/2 drop of oil to the shaft ⑬. (Fig.B)
(6) Assemble the switch lever ④ to the shaft ⑬ while aligning the groove ⑭ with the projection ⑮ of mode switch. At this time, insert the pin ⑯ to the outside groove ⑰ of drive gear (left) ⑰.
(7) Secure it with a washer ③.
(8) Attach the eject lever ② and hook the claw ①.
(9) In the same procedures in "3-3", mount the capstan motor.

*Note: When installing the switch lever ④ to the shaft ⑬, set the pin ⑧ of tension regulator arm to the inside of switch lever ④. (within the extent of Ⓐ indicated by an arrow.)

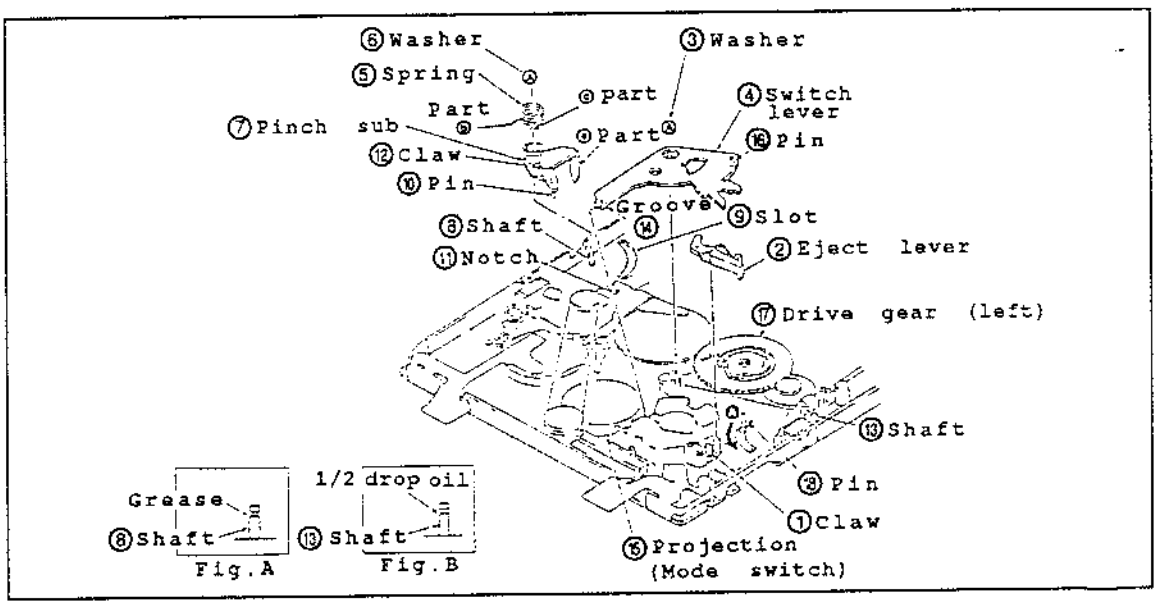


Fig.II-20

3-14 Timing Belt (L), RC Gear, Loading Lever, Timing Belt(S), Joint Gear

• Disassembling (Fig.II-21)

(1) Set unloading state
(2) In the same procedures in "3-3", dismount the capstan motor.
(3) In the same procedures in "3-13", detach the pinch sub arm.
(4) Remove the washer ①. Then dismount the RC gear ② (with the timing belt (L) ③ hooked) from the shaft ④.
(5) Remove the washer ⑥. Then, detach the loading lever ⑧ while pushing the claw ⑦ toward the direction Ⓐ.
(6) Turn the stopper ⑨ toward the direction Ⓑ by 90°.
(7) Detach the joint gear ⑪ (with the timing belt(S) ⑩ hooked) from the shaft ⑯.
(8) Separate the timing belt(S) ⑩ from the relay pully ⑤.

*Note: When dismounting the gear ⑪, do not touch the flange ⓑ part. (Fig.D)

• Reassembling (Fig.II-21)

(1) Apply 1/2 drop of oil to the shaft ⑯. (Fig.F)
(2) Hook the timing belt(S) ⑩ to the joint gear ⑪, and then to the gear ⓓ of relay pully ⑤ (Fig.E).
(3) Attach the joint gear ⑪ to the shaft ⑯ with the timing belt(S) ⑩ attached.
(4) Turn the stopper ⑨ toward the ⓒ direction until it comes to an end.
(5) Apply 1/2 drop of oil to the shaft ⑫. (Fig.A)
(6) Insert the loading lever ⑧ into the shaft ⑫. Then, match the ⓐ part with the claw ⑦ and insert the pin ⑬ into the groove of drive gear (right) ⑭.
(7) Secure the washer ⑥.
(8) Hook the timing belt(L) ③ to the gear as indicated in the Fig.B, and to the gear Ⓒ of the relay pully ⑤. (Fig.E)
(9) Mount the RC gear ② to the shaft ④ (with the timing belt(L) ③ attached). Then, mesh it with the RK gear ⑮.
(10) Secure the washer ①.
(11) Apply the grease to the position of loading lever ⑧ as indicated in Fig.C.
(12) In the same procedures "3-14" and "3-3", assemble the pinch sub arm and the capstan motor.

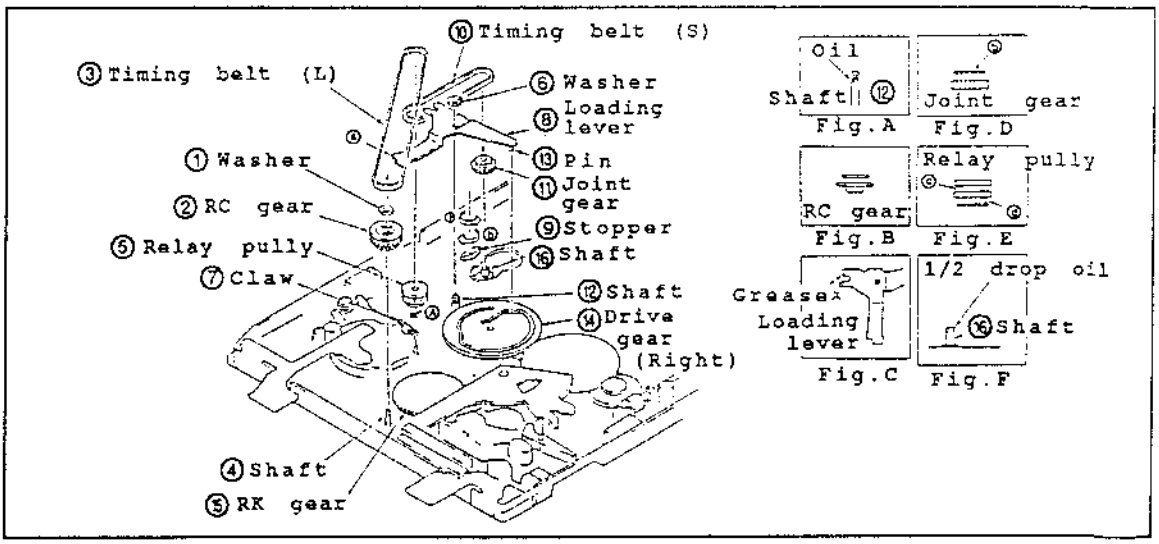


Fig.II-21

3-15 Relay Pully, TS Brake, LB Gear, RK Gear

• Disassembling (Fig.II-22)

(1) Set unloading state.
(2) In the same procedures in "3-3", dismount the capstan motor.
(3) In the same procedures in "3-13", detach the switch lever.
(4) In the same procedures in "3-14", detach the timing belt(L), the RC gear, the loading lever, the timing belt (S) and the joint gear.
(5) To take off the relay pully ②, remove the washer ①.
(6) To detach the TS brake ④, unhook the claw ③.
(7) Remove the spring ⑤.
(8) To detach the LB gear ⑦, remove the washer ⑥.
(9) Detach the RK gear ⑧.

*Note: When taking off the relay pully ②, do not touch the flange part ⓐ. (Fig.C)

• Reassembling (Fig.II-22)

(1) Apply the 1/2 drop of oil to the shaft ⑨. (Fig.A)
(2) Install the RK gear ⑧ to the shaft ⑨ longitudinally.
(3) Apply the 1/2 drop of oil to the shaft ⑩. (Fig.B)
(4) Install the LB gear ⑦ to the shaft ⑩. Then secure it with the washer ⑥.
(5) Put the spring into the shaft ⑪. Then, hook it to the notch ⑫, and cut-up part ⑬.
(6) Assemble the TS brake ④, and hook the claw ③.
(7) Apply the 1/2 drop of oil to the shaft ⑭. (Fig.D)
(8) Attach the relay pully ② to the shaft ④, and secure it with the washer ①.
(9) In the same procedures in "3-14", attach the timing belt(L), the RC gear, the loading lever, the timing belt(S) and the joint gear.
(10) In the same procedures in "3-13" and "3-3", install the switch lever and the capstan motor.

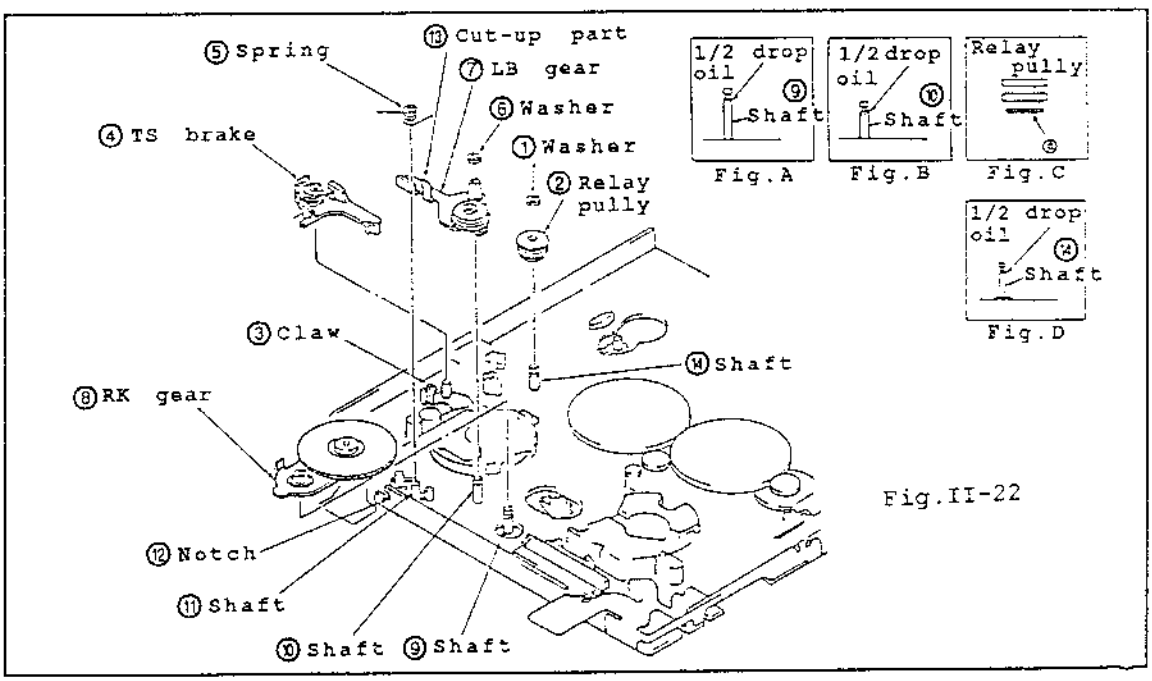


Fig.II-22

Fig.II-22

3-16 UL Gear, UL Brake, UL Arm, LB Plate spring

• Disassembling (Fig.II-23)

(1) In the same procedure in "3-13", detach the switch lever.
(2) To take off the UL gear ②, remove the washer ①.
(3) Detach the UL arm ③, the washer ④ and the LB plate spring ⑤.
(4) Take off the UL brake ⑥.

• Reassembling (Fig.II-23)

(1) Install the UL brake ⑥.
(2) Apply the 1/2 drop of oil to the shaft ⑦. (Fig. A)
(3) As shown in the Fig.B, attach the LB plate spring ⑤ to the shaft ⑦. Then, attach the washer ④.
(4) While matching the projection ⑧ with the groove ⑨ of UL brake ⑥, install UL arm ③ to the shaft ⑦.
(5) Attach the UL gear ② to the shaft ⑦. Then, mesh it with drive gear (left) ⑩.
(6) Secure it with the washer ①.
(7) In the same procedures in "3-13", install the switch lever.

*Note: To prevent the LB plate spring ⑤ damaging, do not secure the washer ① forcibly.

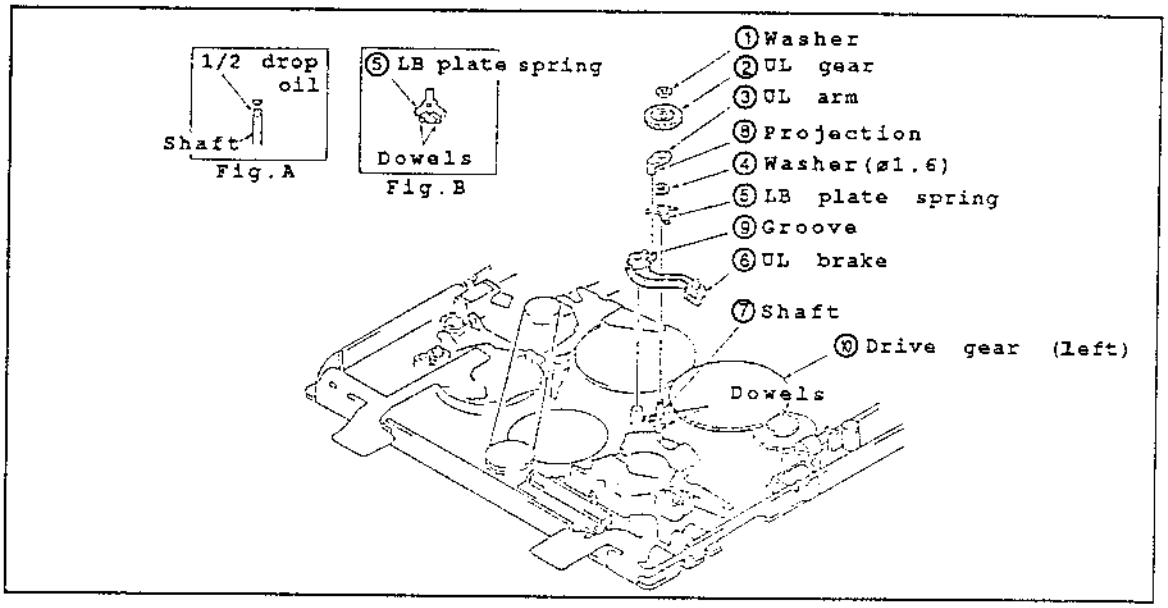


Fig.II-23

3-17 Coaster (Right), Drive Gear (Right)

• Disassembling (Fig.II-24)

(1) In the same procedures "3-3" and "3-12", dismount the capstan motor and the drum unit.
(2) In the same procedures in "3-14", take off the loading lever.
(3) Set STOP mode.
(4) To take off the coaster plate spring ② and the coaster (Right) ③, remove the screw ①.
(5) To detach the plate TT ⑤, remove the two screws ④.
(6) To dismount the drive gear (Right) ⑧, remove the washer ⑥ (ø1.5).

• Reassembling (Fig.II-24)

*Caution: Do not turn the tilt adjusting screw Ⓒ of coaster (Right). (Repair parts have been already adjusted.)

(1) Apply the grease to the indicated positions of chassis as shown in Fig.A.
(2) Apply the 1/2 drop of oil to the shaft ⑧. (Fig.F)
(3) Apply the grease onto the pin ⑨, the shaft ⑩ and the dowel ⑮ of coaster (Right) ③.
(4) Assemble the pin ⑨ and the shaft ⑩ aligning the slot ⑪ of chassis.
(5) Put the brake releasing arm ⑫ to the arrowed direction Ⓐ.
(6) Install the drive gear (Right) ⑦ to the shaft ⑧. Then, mesh it with the drive gear (Left) ⑬ while aligning each phases as shown in Fig.B.
(7) Align ⓐ with ⓑ, the hole ⑭ with the pin ⑨ of coaster (Right) ③, respectively.
(8) Secure the washer ⑥ (ø1.5).
(9) Assemble the coaster plate spring ② while aligning the shaft ⑩ (coaster ③) with the pin ⑨. Then, secure it with the screw ①. (Torque: 500g/cm approx).
(10) Assemble the plate TT ⑤ aligning with the dowel ⑮. Then, secure it with the two screws ④ in numerical order.
(11) Apply the grease to the positions indicated in the Fig.C and E.
(12) In the same procedures in "3-14", install the loading lever.
(13) In the same procedures in "3-12" and "3-3", mount the drum unit and the capstan motor.

*Note: After reassembling, perform the tape path adjustment.

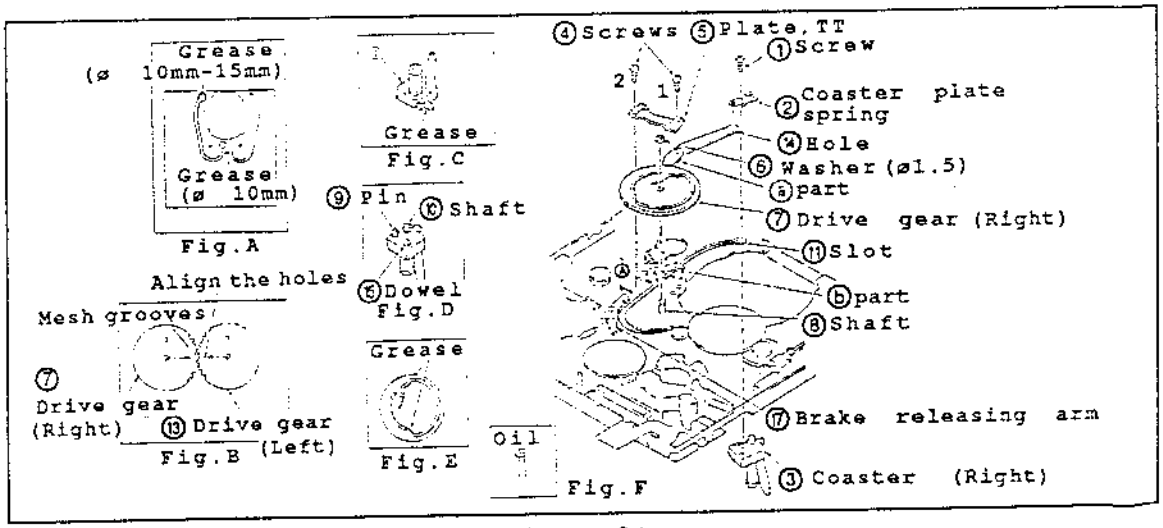


Fig.II-24

3-18 Coaster (Left), Drive Gear (Left)

• Disassembling (Fig.II-25)

(1) In the same procedures in "3-3" and "3-12", dismount the capstan motor and the drum unit.
(2) In the same procedures in "3-13" and "3-14", detach the switch lever, and the loading lever.
(3) In the same procedures in "3-17", detach the coaster (Right) and the drive gear (Right).
(4) To take off the coaster plate spring ② and the coaster (left) ③, remove the screw ①.
(5) To detach the plate SS ⑤, remove the two set screws ④.
(6) To take off the drive gear (Left) ⑦, remove the washer ⑥ (ø1.5).

• Reassembling (Fig.II-25)

(1) Apply the grease onto the indicated positions of chassis in the Fig.A.
(2) Apply the 1/2 drop of oil onto the shaft ⑧. (Fig.E)
(3) Apply the grease onto the pin ⑨, the shaft ⑩ and the dowel ⑯ of coaster (Left) ③.(Fig.B)
(4) Assemble the pin ⑨ and the shaft ⑩ aligning the slot ⑪.
(5) Insert the driver gear (Left) ⑦ into the shaft ⑧ while meshing with the wheel gear ⑫ and the UL gear ⑬.
(6) Align ⓐ part with the slot ⑪, and the hole ⑭ with the pin ⑨ of coaster (Left) ③.
(7) Secure it with the washer ⑥ (ø1.5).
(8) Install the coaster plate spring ② while aligning the shaft ⑩ and the pin ⑨ of coaster (Left) ③. Then, secure it with the screw ①. (Torque: 500g/cm,approx)
(9) Attach the plate SS ⑤ while aligning with the dowel ⑮. Then, secure it the two screws ④ in numerical order.
(10) Apply the grease onto the positions indicated in the Fig.C and D.
(11) In the same procedures in "3-17", install the coaster (Right) and the drive gear (Right).
(12) In the same procedures in "3-14" and "3-13" install the loading lever and the switch lever.
(13) In the same procedures in "3-12" and "3-3", install the drum unit and the capstan motor.

*Note: After reassembling, perform the tape path adjustment.

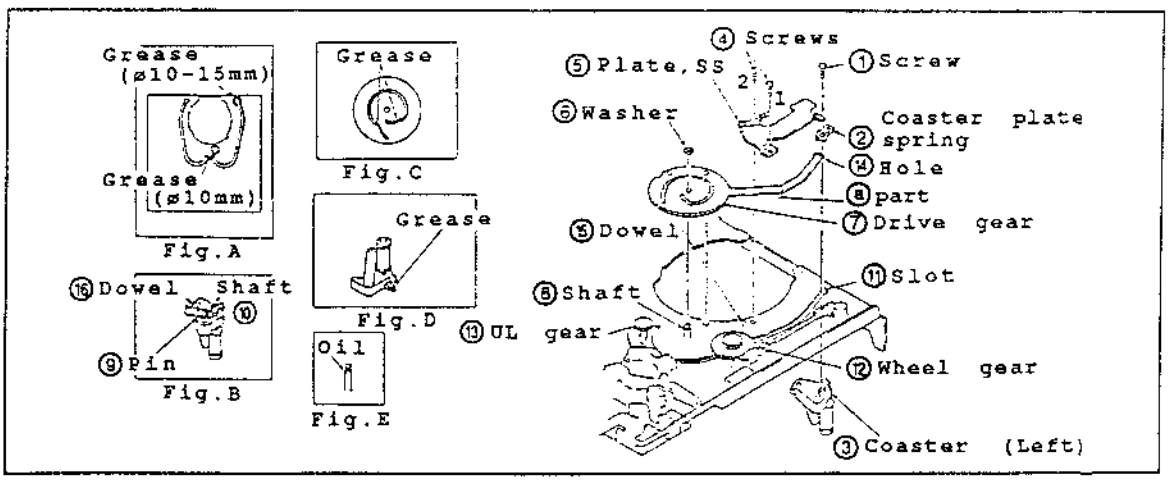


Fig.II-25

3-19 Loading Motor, Worm Assembly, Wheel Gear, Brake Releasing Arm

• Disassembling (Fig.II-26)

(1) In the same procedures in "3-3" and "3-13", dismount the capstan motor and the switch lever.
(2) In the same procedures in "3-14", detach the loading lever.
(3) In the same procedures in "3-17" and "3-18", detach the drive gears (Right) and (Left).
(4) To dismount the loading motor ②, remove the two screws ①.
(5) Take off the brake releasing arm ③.
(6) To take off the wheel gear ⑤, remove the washer ④.
(7) Unhook the six claws ⑦ of worm a'ssy..

• Reassembling (Fig.II-26)

(1) Install the worm a'ssy ⑥ while hooking the six claws ⑦.
(2) Apply the grease to the five shadow areas of worm a'ssy indicated in the Fig.A.
(3) Apply the 1/2 drop of oil to the shaft ⑧. (Fig.B)
(4) Insert the wheel gear ⑤ into the shaft ⑧, and mesh it with the worm a'ssy's gear.
(5) Assemble the brake releasing arm ③.
(6) Apply the grease onto the entire surface of loading motor gear part.
(7) Align the loading motor ② with the chassis. Then, secure them with the two screws ②.
(8) In the same procedures in "3-18" and "3-17", install the drive gears (Left) and (Right).
(9) In the same procedures in "3-14", install the loading lever.
(10) In the same procedures in "3-13" and "3-3", install the switch lever and the capstan motor.

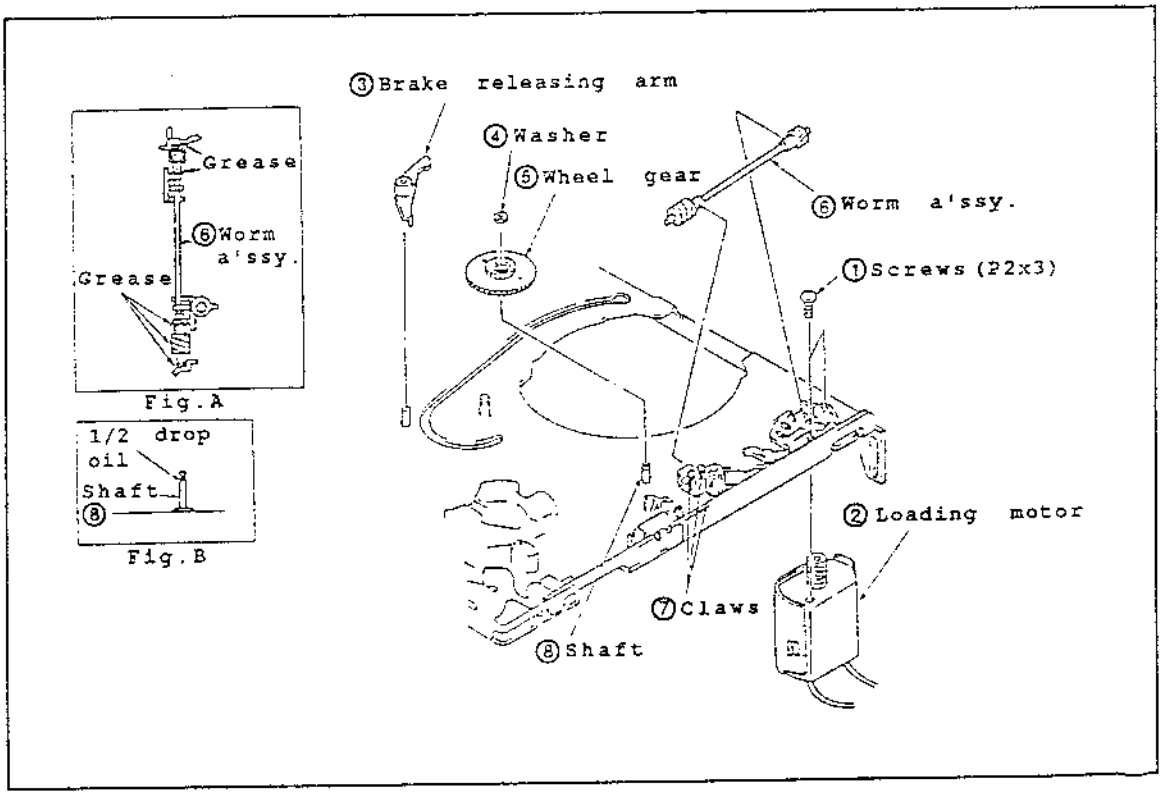


Fig.II-26

3-20 Rotary Upper Drum

• Disassembling

Note: If recordable, perform recording before disassembling.

(1) Unsolder three solderings ⓐ. Then, confirm that the terminals which come out from the hole of C.B.A. can be moved freely. (Fig.II-27)
(2) Remove the two setscrews ①.
(3) Secure the jig ④ to the drum with the two setscrews ②. (Setscrews supplied with jig ④ as a set.) Then, screw in the hexagonal bolt ③ into the hole of jig ④ to dismount the rotary upper drum ⑤. (Fig.II-28)

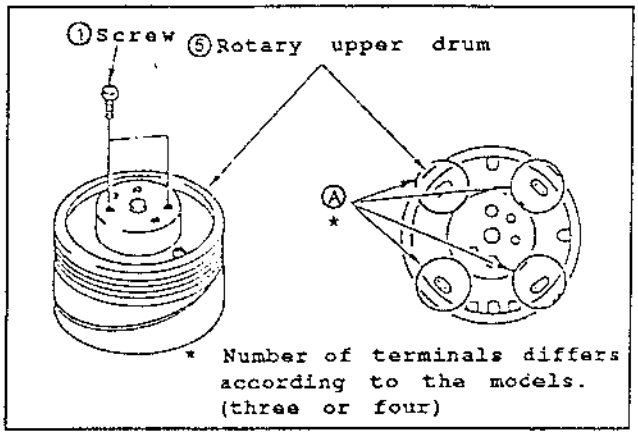


Fig.II-27

• Reassembling

(1) Clean the flange surface and the rotary upper drum ⑤ surface which faced the flange surface. Check that there is no dust particles and flaws.
(2) Insert the jig ⑦ into the drum positioning holes of upper/lower rotary drum. (Fig.II-29)

*Note: At this time confirm that the terminals ⑧ come out from the holes of the rotary upper drum C.B.A..

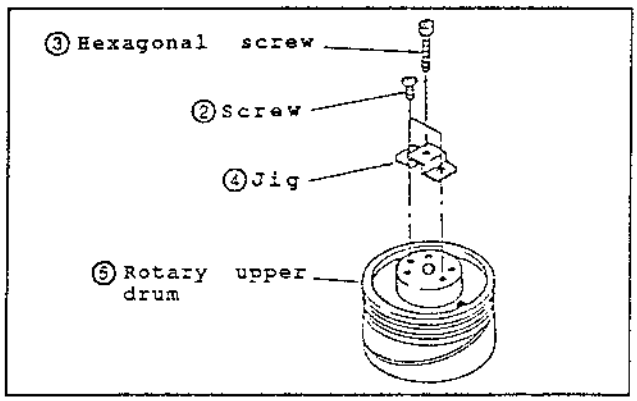


Fig.II-28

(3) Pull out the jig ⑦, and then push the rotary upper drum ⑤ into the lower one manually and gently. If it cannot be set completely to the bottom, Tighten the two setscrews ① alternately and temporarily. (Fig.II-27)
(4) Insert the jig ⑦ into the positioning holes ⑥ again. If it cannot be inserted smoothly, loosen the two setscrews ①. Then perform the step (3) of disassembling procedure.
(5) Tighten the two setscrews ① thoroughly.
(6) Solder the terminals ⓐ. (Fig.II-27)

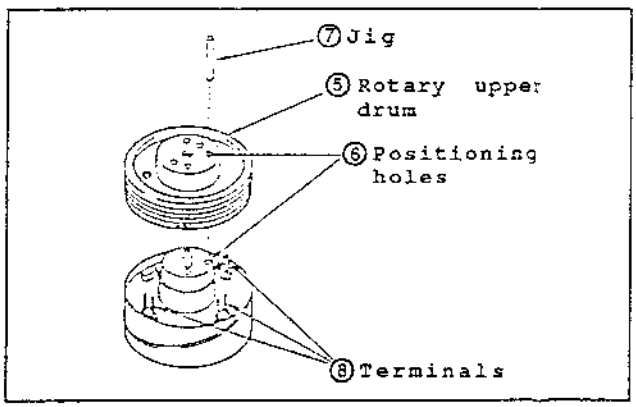


Fig.II-29

*Notes: 1. When soldering, be careful not to let the solder flow to the C.B.A..
2. After reassembling, perform the tape path adjustment.

3-21 Tension Regulator Position Adjustment (Fig.II-30)

(1) Set the cassette tape, and set it to PLAY mode.
(2) Check that the distance between ⓐ part of tension regulating arm ① and the groove ② of chassis is within 1.1 ± 0.3mm. If it is not the specified distance, perform the following adjustment (from step (3)) without the cassette tape.
(3) Loosen the screw ④ of tension regulating plate ⑤.
(4) If the distance measured in step (2) is more than specified, slide the plate ⑤ in the direction of arrow Ⓐ. If it is less than the specified slide it in the direction of arrow Ⓑ. After sliding, secure it with the screw ④.
(5) For checking, perform the steps (1) and (2).

*Notes: 1. Use the cassette tape which is forwarded to about the middle section.
2. The trail of left coaster on the groove ② of chassis: 1.1mm(approx.)

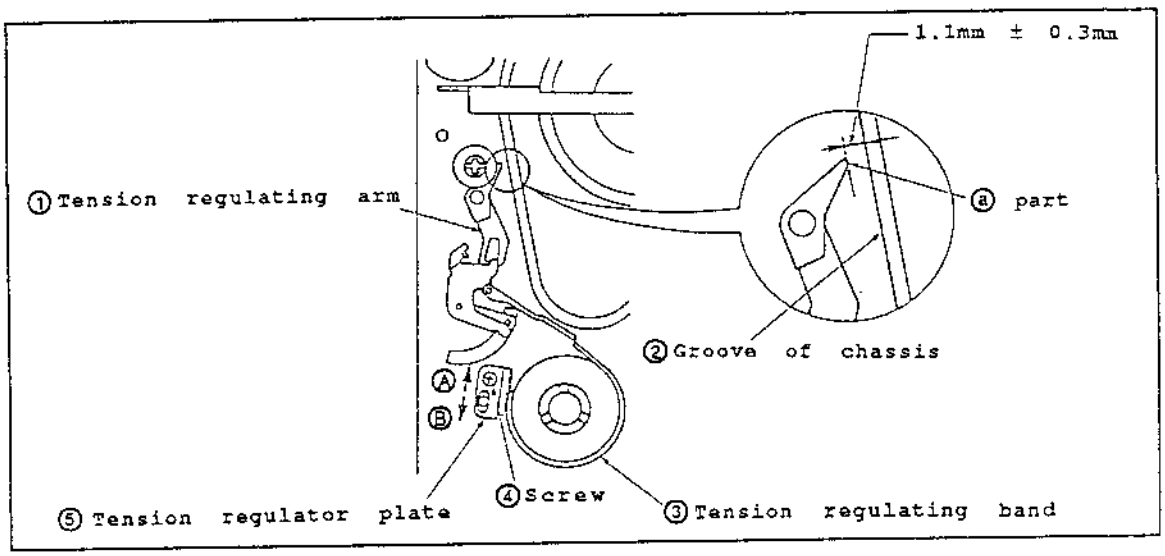


Fig.II-30

3-22 Back Tension Adjustment (Fig.II-31)

(1) Set the cassette torque gauge (DY9-1047-000)
(2) Set PLAY mode.
Confirm that the torque at S reel table is 9-13 g/cm.
(3) If not, adjust the adjust arm ①.

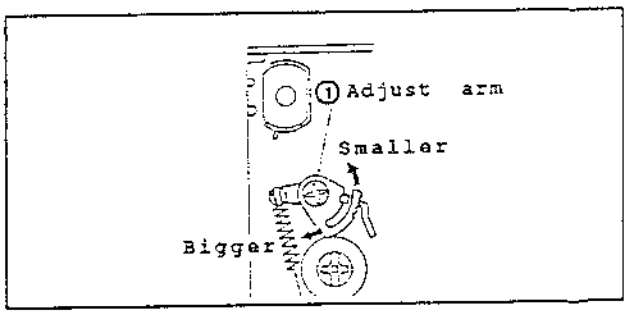


Fig.II-31

3-23 T Reel Table Torque Check

(1) Set the cassette torque gauge (DY9-1047-000)
(2) Set PLAY mode.
Confirm that the torque at T reel table is 7-15 g/cm.
(3) Set REV mode.
Confirm that the torque at T reel table is 13-25 g/cm.

4. Tape Path Adjustment

(Notes for No.7 Guide only)

As the height adjusting screw for No.7 guide is located apart from the No.7 guide . So, to adjust the No.7 guide while watching the state of tape, modify the cassette tape as shown in the Fig.II-32.

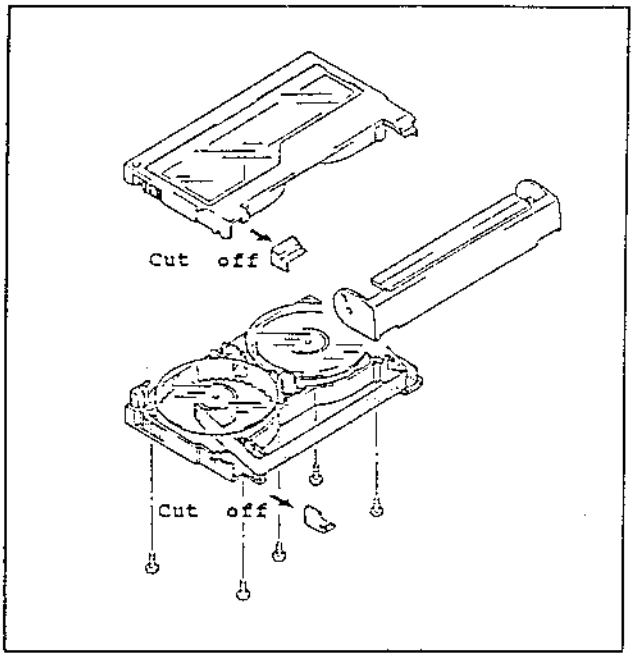


Fig.II-32

4-1 Preparation for Adjustment

*Caution: 1. Do not turn the tilt adjusting screw of the coaster (Right). Replace it if any adjustments required.The repair parts have been already adjusted.

(1) Clean the tape running surface.
(2) Referring to the service manuals for each system, observe the RF envelope signal and RF switching pulse on oscilloscope.
(3) Playback the Alignment tape for tracking.
(4) Confirm that the waveform at inlet and outlet sides are flat.
If not, perform the following adjustments from page 46.

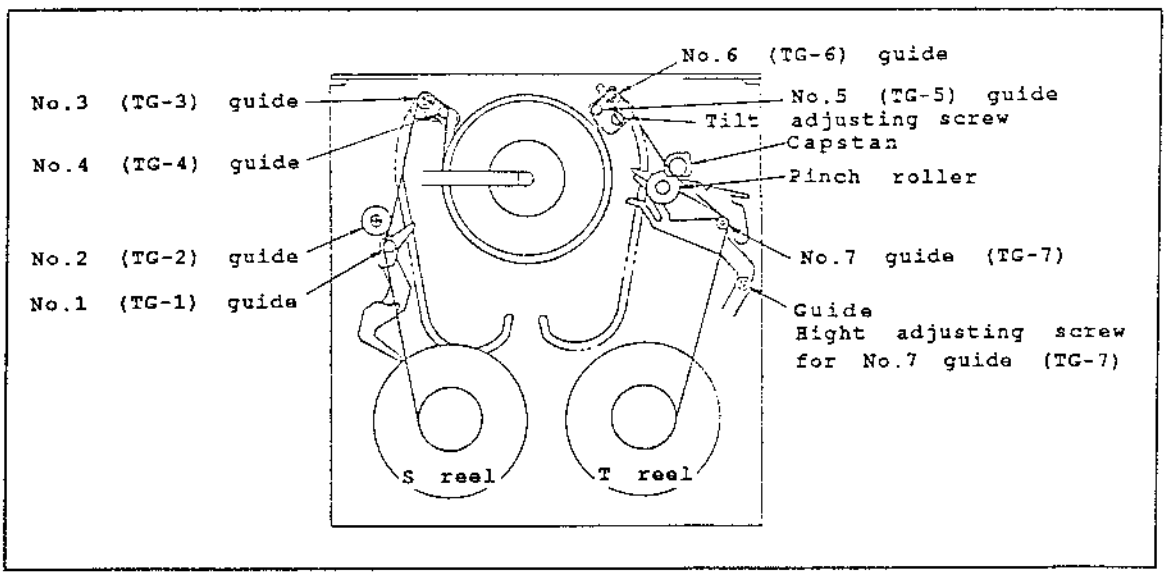


Fig.II-33

4-2 Tracking Adjustment (Fig.II-34)

(1) Playback Alignment tape for tracking adjustment.
(2) Loosen the screw ② a little by inserting a hexagonal wrench (0.89mm) or equivalent into the hole ①.
Then, turn the No.3 guide ③ to make the waveform at inlet side flat.
(3) Loosen the screw ⑤ a little by inserting a hexagonal wrench (0.89mm) or equivalent into the hole ④.
Then, turn the No.6 guide ⑥ to make the waveform at outlet side flat.

*Note: Be careful not to loosen the screws too much because the guide will be easily moved.

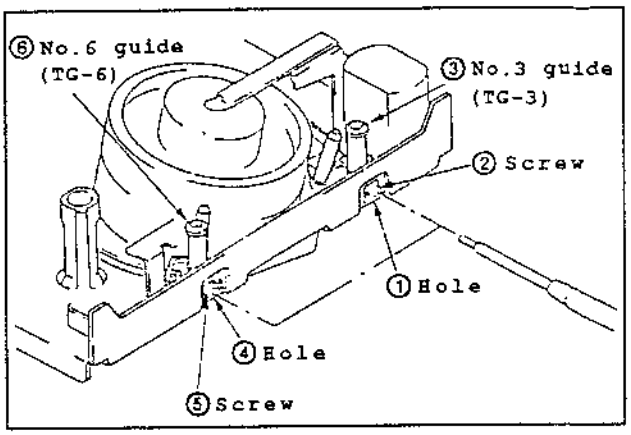


Fig.II-34

4-3 Tracking Fine Adjustment (Fig.II-35)

(1) Referring to the service manuals for each system, set it to the track shift made.(70 %)
(2) Confirm that the waveform is flat. If not, turn No.3 and 6 guides to make it flat.
(3) Tighten the screw ② of No.3 guide to lock it. At this time, confirm that the inlet side of waveform is not changed. (Fig.II-34)
(4) Tighten the screw ⑤ of No.6 guide to lock it. At this time, confirm that the outlet side of waveform is not changed.(Fig.II-34)

*Note: Torque at Screws ②, ⑤: 200g/cm approx.

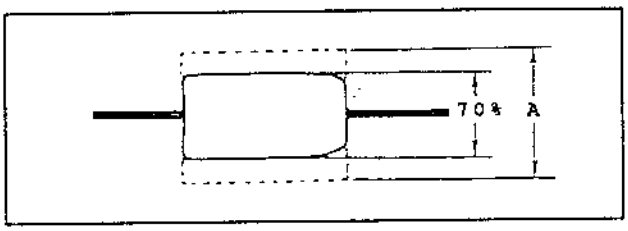


Fig.II-35

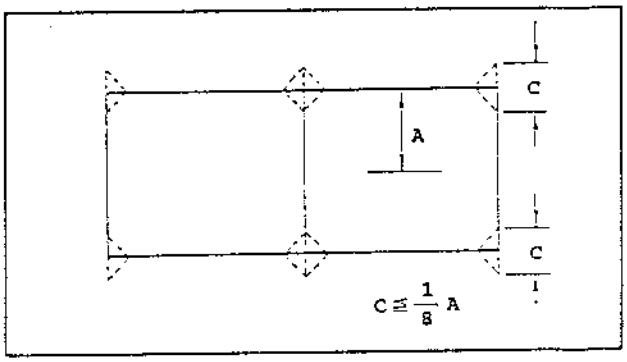


Fig.II-36

4-4 No.2 Guide Adjustment

*Note: When turning or replacing the No.2 guide, perform the following preset procedures before adjustment.

4-4-1 No.2 Guide Presetting

• To preset, adjust the distance between the surfaces of mechanical chassis and TG2 upper flange ① to 18.6 mm by turning TG2 upper flange ①.

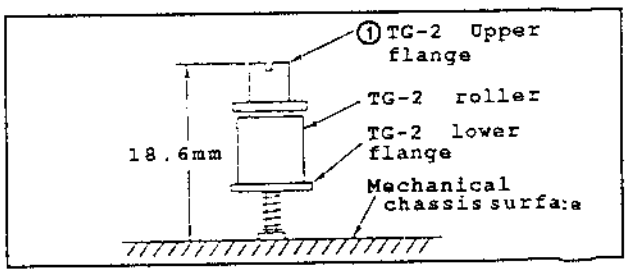


Fig.II-37

4-4-2 No.2 Guide Adjustment (Fig.II-38, 39)

(1) Playback the tape having 10μm in thickness (P6-120 etc.). Then, set it to REV mode.
(2) Confirm that the tape is not creased at the lower flange ② of No.2 guide ①. If creased, turn the upper flange ③ of No.2 guide ① clockwise until the crease removed.
(3) Playback the Alignment tape for tracking adjustment.
(4) In the same procedures in "4-2" and "4-3", perform the tracking and tracking fine adjustments.
(5) At track shift mode, playback the tape after CUE/REV mode. Confirm that the RF envelope rises horizontally within 2 sec as shown in Fig.II-40.
(6) If not, turn the upper flange ③ of No.2 guide ① counter clockwise by 90°. Then, perform the step (5) again.

Repeat the steps (5) and (6) until the normal waveform as specified is obtained. When the RF envelope changed at this time, perform the tracking fine adjustment for inlet side. Then, perform the step (5).

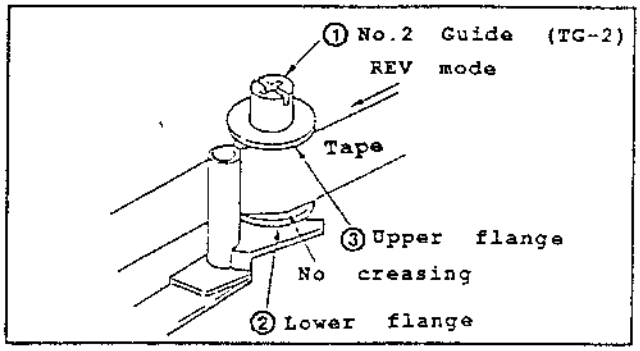


Fig.II-38

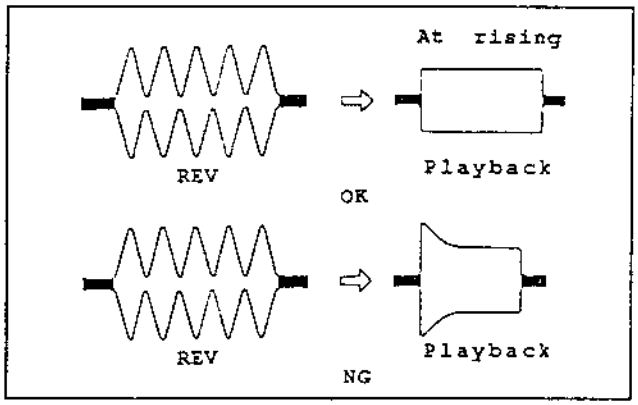


Fig.II-39

4-5 No.7 Guide Adjustment (Fig.II-40)

(1) Playback the tape having 10μm in thickness (P6-120,etc.). Then, set it to REV mode.
(2) Confirm that the tape between the No.6 guide ① and the capstan ② is not loosened. If loosened, turn the height adjusting screw ④ of No.7 guide ③ to remove it.
(3) Set it to PLAY mode. Then, confirm that the tape between the capstan ② and the No.7 guide ③ is not loosened (0.5mm or less).

If not (more than 0.5mm), turn the height adjusting screw ④ of No.7 guide ③ until the rating is obtained.
(4) Set it to REV mode again. Confirm that the tape loosening between the No.6 guide ① and the capstan ② is 0.3mm or less.

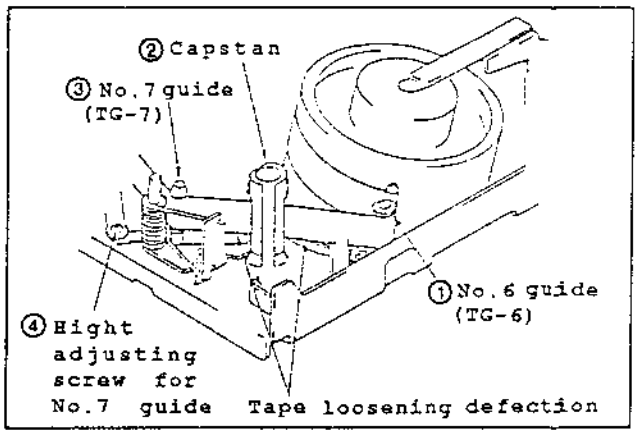


Fig.II-40

4-6 Checks after Adjustments

*Note: If the following ratings cannot be obtained, perform the tracking, tracking fine, No.2 guide and No.7 guide adjustments, respectively.

4-6-1 Tracking Check (Fig.II-41)

(1) Set it to the track shift mode. Confirm that the amplitude of RF envelope is 70% approx.
(2) Confirm that the minimum amplitude (E MIN) is 65% or more of the maximum (E MAX).
(3) Confirm that the waveform has no variations.

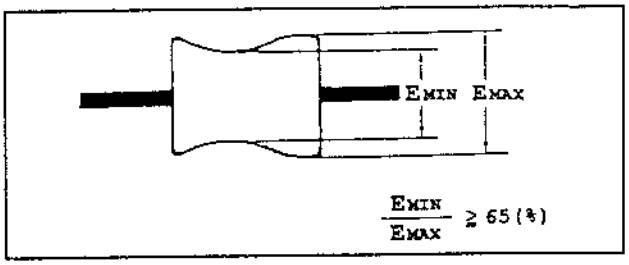


Fig.II-41

4-6-2 CUE/REV Waveform Check (Fig.II-42)

(1) Playback the alignment tape for tracking adjustment. Then, set it to REV mode.
Confirm that the tops between each waveform remains stable and equal within 5 sec.
(2) Set it to CUE mode.
Confirm that the tops between each waveform remains stable and equal for mor than 5 sec.

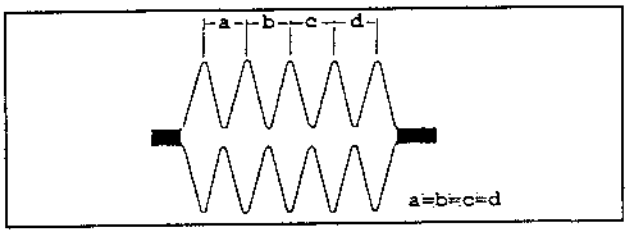


Fig.II-42

4-6-3 Rise Time Check

(1) Playback the alignment tape for tracking adjustment.
(2) After ejecting the tape once, playback it again.
(3) Confirm that the RF envelope rises horizontally within 2 sec. Also, check that the tape is not loosened around the pinch roller.
(4) After set it to CUE/REV and FF/REW, playback it again.
Confirm that the RF envelope rises within 2 sec. horizontally.
Also, check that the tape is not loosened around the pinch roller.
(5) Repeat check procedures from (2) to (4) again.

4-6-4 Tape Movement Check (Fig.II-43)

(1) Playback the cassette tape having 10μmm in thickness (P6-120 etc.).
Confirm that the tape at each guide as indicated in the Fig.II-44 is not deflected or curled. (less than 3mm acceptable).
(2) Set it from PLAY to CUE. Then, set it from PLAY to REV.
Confirm that the tape at each guide is not also deflected or curled. (less than 0.3mm acceptable).

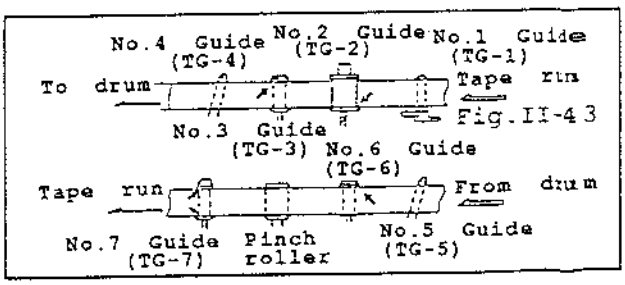


Fig.II-43